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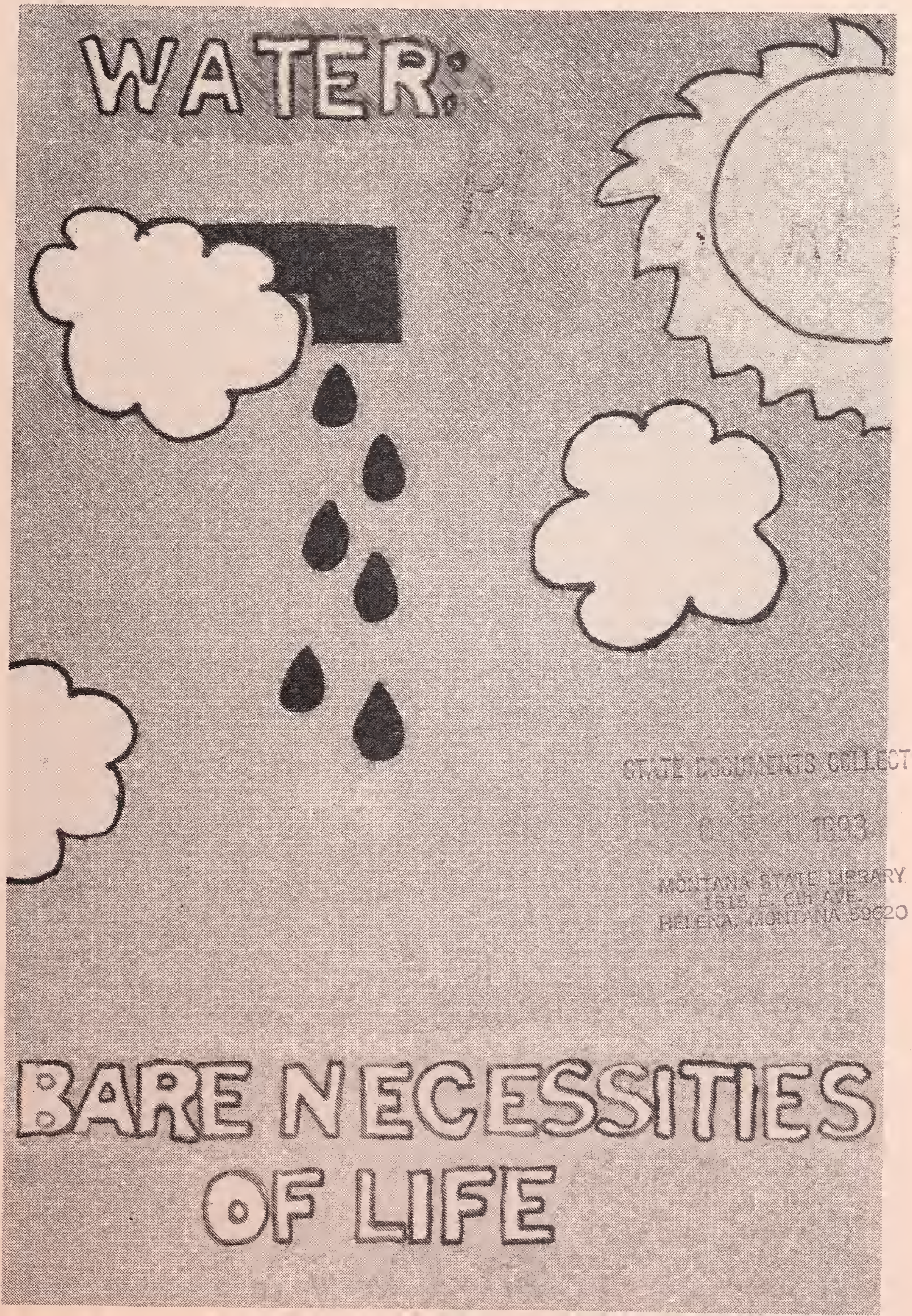
Big Sky Clearwater

Published jointly by Montana Water Quality Bureau, Montana Water Environment Association,
and Montana Section American Water Works Association

FALL 1993



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If you have any ideas or information that you would like to pass along to other people involved in the water and wastewater field, please don't hesitate to contact the Water Quality Bureau. This publication welcomes articles of interest and random pieces of information regarding anything to do with water.

An article may consist of your own thoughts and ideas about something you may have experienced. Perhaps such information could help someone else in their day-to-day work. It could also be a technical article that is developed from research information and library resource material. If it has to do with water and you think it may be of interest, give us a call at (406) 444-2406.

If you do not wish to continue receiving this publication, please send us your name and address so that we may remove your name from our mailing list...thanks.

Water Quality Bureau
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Cover: *Our cover features one of the winning entries in the Water Education Calendar/National Drinking Water Week poster contest. This poster by Jonni Fornall, a sixth grade student from the Eureka Elementary School in Eureka, Montana. See the "Water Education Poster Contest" story inside!*

WATER POLLUTION CONTROL FEDERATION
1928

The *Big Sky Clearwater* is for
water and wastewater operators
across Montana. It is published
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Will water supplies go the way of the buffalo?

Information is now emerging that suggests we should change our overall thinking and attitudes about a plentiful global water supply. Drought and floods are not the only enemies our water supplies face. Water wastefulness and mismanagement of our water resources are threatening to create a water crisis in areas around the globe. Water managers, and we as individuals, need to understand what is happening to our water supplies globally and alter our attitudes toward water accordingly.

Water guzzling toilets, leaky pipes in the world's oldest cities, overly thirsty crops, government-subsidized irrigation, and industries that gorge on water all contribute to the problem, according to Sandra Postel in her book, *Last Oasis: Facing Water Scarcity*, recently published by the Worldwatch Institute. In the quest for a better standard of living and economic gain -- noble goals with which we have no argument -- modern society has come to view water only as a resource for the taking and not one to be managed over the long term for the sake of future generations, Postel says.

Each country, to supply its population and civilization, needs about 725 gallons a day of replenishable water supply per person, suggests Swedish hydrologist, Malin Falkenmark. The Earth holds about 10 times the amount of water required to meet this need, however, it is not distributed evenly over populated areas. Worldwide water use has tripled since the 1950s, and 26 countries now have more people than their water supplies can adequately support, says *Last Oasis*. Eleven African nations are among these 26 nations that now fall below the per-person level of 725 gallons a day. South Africa, Sudan, Morocco, and Malawi will join the list by the end of the century, Postel says.

Agriculture claims the lion's share of all the water taken from rivers, lakes, and aquifers, accounting for an estimated 65 percent of global water use. As efforts to extend cropland have dwindled, agriculture has squeezed more production from existing cropland through irrigation. While the world's population over this century has swelled from 1.6 billion to 5.4 billion, Postel reports agriculture's use of water has increased fivefold.

Industry is a distant second in global water demand using one-fourth of the Earth's freshwater resources, according to Postel. However, Japan and the United States have both managed to increase their industrial output in the last 20 to 40 years while at the same time reducing the amount of water consumed for industrial processes. Water pollution control laws have provided the main impetus for increased industrial water recycling in most of the world's wealthier countries.

We come by our "errant" attitudes about water honestly, though. We in America have always had plenty of water. Even if one lives in dry desert places like Phoenix, one has always been able to turn the tap and get almost any quantity of water desired with little regard for the effort or cost to obtain that water. And we have become jaded, too, by the continuing parade of Chicken Littles proclaiming the sky is falling, again.

We subconsciously think about water today much like our frontier forefathers thought about the vast buffalo herds of their day. Millions of buffalo ran together in herds, sometimes taking days to pass by. No one ever thought they would be almost entirely eliminated. Because we have always had plentiful water in the past, we have been lulled into thinking water will always be plentiful in the future, choosing to ignore the fact that the Earth's population is exploding, requiring even greater stresses on our water supplies to produce drinking water, flood, clothing, and a multitude of household needs.

But it is often difficult for each of us to see a connection between turning the tap at home and a villager in Haiti who must walk three miles a day to get polluted drinking water. And the farmer trying to feed his family (and the world, by the way), isn't geared to thinking about a drought-stricken village in India as he fires up the irrigation system, doing the best he knows how to make his farmland as efficient as possible.

But while our water use at home has perhaps no direct effect on others around the globe, it does have an effect on others in our own water region.

For many countries, reducing their rate of population growth will be the only means of managing already-strained water supplies. Postel says with currently-available technologies, agricultural water use can be cut 10 to 50 percent, industrial use 40 to 90 percent, and municipal use by one-third "with no sacrifice to economic output or quality of life." The boost to current water supplies will be most helpful in an era when new water supplies have become difficult or too expensive to build.

Opportunities exist to economically exploit this change in water thinking by creating new water-saving devices for the marketplace. And in many cases, achieving better water management will require decentralizing control over water and allowing decisions to be made more directly by those actually using the water. In any event, we must begin to alter our attitudes about a resource we take for granted, realizing that while water is a renewable resource, it is also finite.

Editorial
U.S. WATER NEWS
May 1993

Shaping Future Training

by Jan Boyle, METC Coordinator

What do certified water and wastewater operators in Montana need to know about water quality and water or wastewater treatment? The Montana Environmental Training Center (METC) recently conducted a "Needs-to-Know" Operator Survey that asked these operators to identify water, wastewater and other environmental topics and prioritize their top five choices from a list of appropriately specific items associated with **water, wastewater or small systems**. Operators in the state were identified as water, wastewater or small system certified, and each was then mailed the appropriate survey form to complete. Those operators certified in both water and wastewater received each of the water and wastewater surveys. In addition to the list of topics to be prioritized, each survey asked some questions of the operator pertaining to: 1) preference of one-day versus multi-day workshops for a specific topic; 2) delivery of training through interactive television; 3) distance one would travel for one-day or multi-day workshops; and, 4) applying Continuing Education Credit (CEC) to a post-secondary degree. The results for each of the water, wastewater and small systems are as follows:

CLASS 1 and 2 WASTEWATER
(57 responses)

Priority Subject Areas:

1. Computer Courses
2. Pumps and Controls
3. Health Effects on Wastewater Operators
4. Safety (especially laboratory and working with chemicals)
5. Activated Sludge Process Control

Additional training items highly requested:

- Advanced Laboratory
- Microbiology of Activated Sludge
- Industrial Pretreatment
- Collection System Maintenance
- Sludge Disposal Techniques

Response to the above questions showed that longer than one-day workshops were supported for a specific topic and there was a high interest in interactive television for training. In general, the wastewater operators were interested in applying CEC credit to a post-secondary degree.

CLASS 3 and 4 SMALL SYSTEMS
(71 responses)

Priority Subject Areas:

1. New Regulations
2. Chlorination/Disinfection
3. Leak Detection
4. Distribution System Maintenance
5. Lagoon Operation and Maintenance

Additional training items highly requested:

- Rules and Regulations on Water/Sewer Main Line Extensions
- Community Wells
- Timetables for Phase II & V Rules
- First Aid
- Separation of Waste Systems from Wells (Homeowner Associations and Trailer Courts)

Small system responses to the questions included a very high interest in interactive television training. This may be due to the unique situation that many small systems are up against -- the operator is working a full-time job in addition to being the operator of the community water/wastewater system.

This leaves little time for travel to workshops and attending longer than one-day workshops, and the responses reflected this. Small systems were also interested in viewing training videos (library materials for check-out) on a specific topic and submitting a completed questionnaire about the video topic for CEC. They were also willing to travel up to 125 miles to attend a one-day workshop.

CLASS 1 and 2 WATER
(51 responses)

Priority Subject Areas:

1. New Regulations
2. Distribution System Maintenance
3. Water Administration
4. Pumps and Motors
5. Filtration, and Computers in Water Treatment (tied for 5th)

Additional training items highly requested:

- Safety (On-site Instruction)
- On-site Visits as part of the workshop format
- Cross-connections
- Surface Water Requirements

Water operator responses to the above questions included a high interest in longer than one-day workshops as long as the targeted topic pertained to important water subjects. Interactive television was of interest for training on specific topics, but there seemed to be some confusion on what it would entail as far as implementation on a statewide basis. In general, they liked the idea of applying CECs to a post-secondary degree, although they asked for clarification of "advanced degree." Regional training schools (i.e., Bozeman Fall Water School) seemed to be what water operators preferred -- a comment being that a lot of out-of-town travel to one-day workshops would be eliminated.

METC and the METC Advisory Committee met for the annual METC Advisory Committee meeting at the end of June to coordinate the compiled survey information for development of the 1994 Annual Training Calendar for Water and Wastewater Professionals. The METC Advisory Committee is a key element in providing assistance in **"shaping future training"** as well as providing directional guidance for METC and the training center's goals and objectives. The Committee's input along with the Operator Survey provides the METC more focus in addressing the needs of water and wastewater operators, managers and administrators in Montana, and expanding their horizons in other issue-related environmental areas where training is needed.

METC invites suggestions, comments and ideas pertaining to training in environmental areas. Give me a call at our **new phone number -- (406) 454-2728** -- and let's visit! Better yet, stop by the METC Office located at the Northern Montana College Great Falls Campus, 1211 Northwest Bypass. We can do lunch!!

Montana Environmental
Training Center
1211 Northwest Bypass
Great Falls, MT 59404

(406) 454-2728

Jan Boyle
METC Coordinator

Small Montana Water and Sewer Systems Help Each Other

by Judy Sass, Rural Development Specialist
Midwest Assistance Program

Small water and sewer systems in Montana have a unique opportunity to learn about new technologies that will work for their systems. Through membership in the Montana Association of Water and Sewer Systems (MAW&SS), these systems can learn more about systems with similar problems and solutions. They help each other with common system ownership and operation obstacles, and most importantly, become better acquainted with each other.

Association members receive a quarterly newsletter with information pertaining to their systems, as well as periodic "Updates." Members are aware of proposed state and federal regulations and have an opportunity to comment on them. The elected board of directors informs members of topics, locations, etc. when public input is vital. Association members are making an impact on their destiny.

The Association hosts an annual conference in April. The 1993 conference began with a round table discussion including Robb McCracken, Montana Department of Commerce; Lyle Meeks, consultant with Neil Consultants, Great Falls; Dennis Eaton, Culligan Water Treatment Systems; Paul Torok, President, MAW&SS; Judy Sass, Midwest Assistance Program; and a representative from each member system. These systems had an opportunity to meet each other in an informal setting to discuss problems, solutions, complaints, and achievements. They helped each other by sharing information among themselves.

One attendee stated in a letter following the conference: "I particularly enjoyed the round table discussion and information sharing...Jan Boyle's presentation on public relations got me to thinking I could do a lot better job of communicating our problems to my tenants..."

Midwest Assistance Program has been able to provide the Association minimal financial assistance to defray some of the costs of the annual meeting. A participant said, "I am particularly appreciative of the MAP financial support for this meeting. With having to take time off from work to attend and the travel costs involved, the MAP assistance is a very significant factor in my being able to attend this valuable conference."

Association membership includes county water or sewer districts, homeowners associations, water users associations and mobile home park owners. These very small systems have an association geared to providing information that is helpful to them, rather than larger sized systems. They have discovered that a similar problem can occur in a system of any size, and the solution may be different.

The small systems are looking forward to next year's gathering to again learn and benefit from each other's expertise and experience in the operation of the very small water and sewer systems in Montana.

WaterLog
July-Aug.-Sept. 1993 Issue
Midwest Assistance Program
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Water Education

POSTER CONTEST

On June 16, 1993, Governor Marc Racicot presented award certificates to the winners of the Water Education Calendar/National Drinking Water Week post contest. Jim Melstad, Manager of the State Drinking Water Program, gave the Governor and the students "Blue Thumb" T-shirts in recognition of their participation in and support of National Drinking Water Week.

The Water Education Poster Contest was the project of the International Office for Water Education. The contest information was mailed to all K-6 grade schools in Montana. The theme of the contest was "Water Makes Earth Our Home." Each school had the opportunity to conduct a poster contest and submit up to seven entries per school to the state finalist judging competition. The Water Quality Bureau and Project WET Montana were involved as local coordinators. The finalists' posters were judged by the personnel of the Water Quality Bureau.

Tim Black Weasel, a second grade student from the Vina Chattin School in Browning, and Jonni Fornall, a sixth grade student from the Eureka Elementary School in Eureka, were the first place winners.

The Drinking Water Section of the Water Quality Bureau used the contest finalists' posters in its promotion of National Drinking Water Week in Helena. National Drinking Water Week (Blue Thumb Week) was May 2-8, 1993. To celebrate National Drinking Water Week in Helena the following activities were organized: The Bureau offered educational assistance to schools upon request; a tour of the Ten-Mile Water Treatment Plant was offered by the City of Helena; and the media was offered interviews with Water Quality Bureau personnel, Lewis and Clark County Extension Agent Larry Hoffman, and the Water Quality Protection District Supervisor Vivian Drake.

We hope to expand the visibility and recognition of National Drinking Water Week in 1994.

MORE ON NITRATES

by Carole Mackin, Groundwater Section, WQB

Nitrates come from the air and rocks, as well as living organisms.

Air: Nitrogen is the most abundant gas in our atmosphere -- 78 percent. Natural nitrates in the air are usually the result of lightning which causes oxygen and nitrogen gas to react. To a lesser extent, nitrate can also get into the air from volcanic gases that contain nitric acid. The rain and snow wash the nitrates from the air and deposit it into the soil where it is intercepted by plants. Now you know why the grass grows so vigorously after a thunderstorm.

Rock: Nitrates are found in the Colorado and Bearpaw Shale Formations in Montana. Figure 1 shows the locations where the shales outcrop at land surface or lie just below.[1] The average nitrate concentration of groundwater in these formations is 57 mg/l -- over five times the national drinking water standard.[2] In Montana, 47 percent of the public water supplies with MCL violations for nitrates are located on or near the Colorado or Bearpaw Shale.

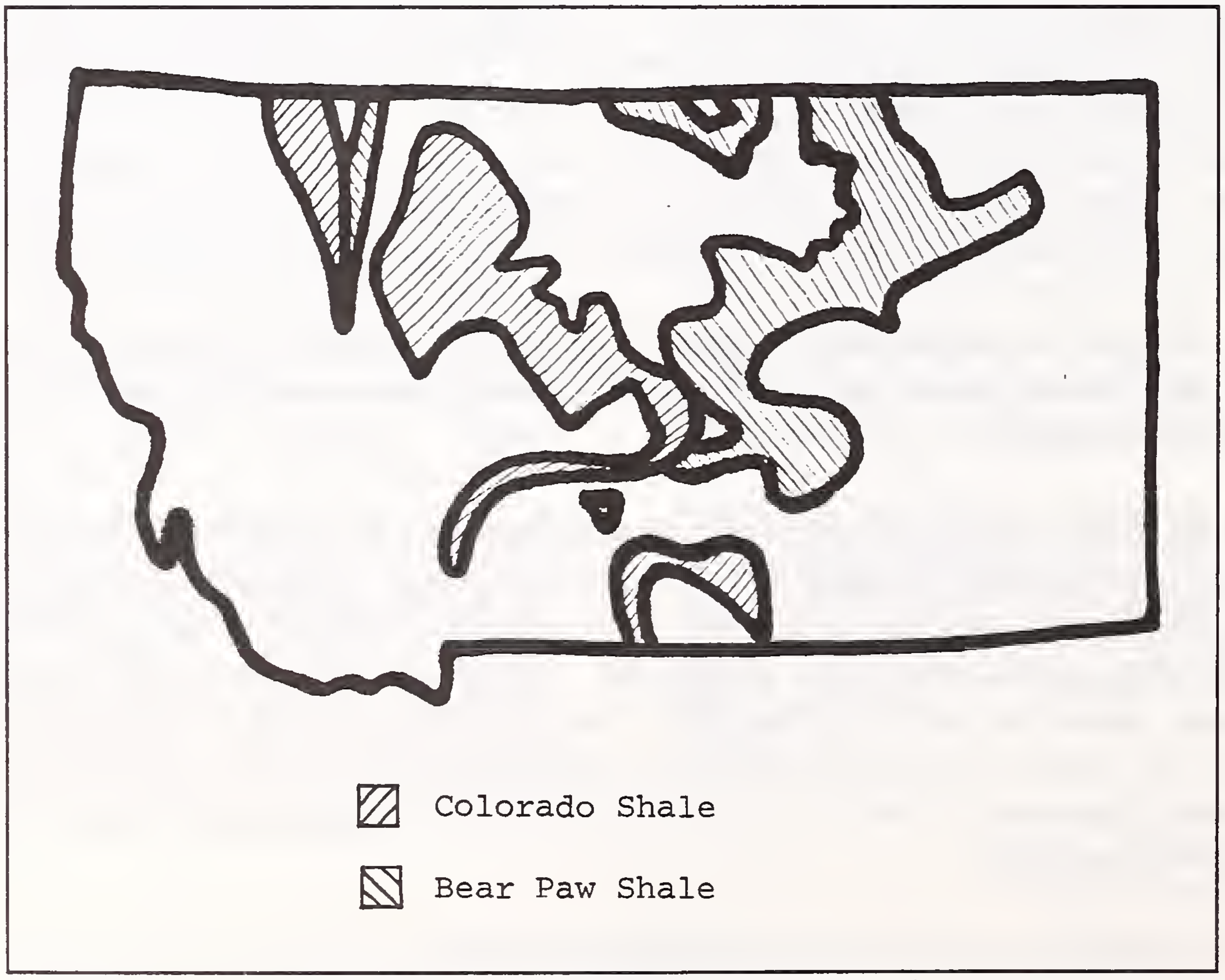


Figure 1 Location of Colorado Shale in Montana

Life: Nitrogen combines to form many compounds that are essential to life -- proteins and genetic material (DNA and RNA). Other nitrogen compounds are found in the waste products of living organisms -- ammonia and urea. The most stable nitrogen compound is nitrate. That means that the nitrogen in any other compound will eventually oxidize to form nitrate.

Are babies still affected by "Blue Baby Syndrome?"

The Association of Poison Control Center reports that between 1991 and 1992 there were a total of 1,825 exposures to nitrates/nitrites. That number included 542 children below the age of six.

Morbidity and Mortality Weekly Report, April 2, 1993, reports that the most common cause of "blue baby syndrome" in the United States is from drinking water contaminated with nitrates from agricultural fertilizers, barnyard runoff, or septic tank effluent. They also have learned that copper leached from the pipes can greatly aggravate the condition.

1. Miller, Marvin and Bergantino, Robert. 1983. *Distribution of Saline Seeps in Montana*. Hydrogeologic Map 7. Montana Bureau of Mines and Geology. Butte, MT.

2. Miller, M. R. et al. 1980. *Saline Seep Development and Control in the North American Great Plains: Hydrogeological Aspects*. Montana Bureau of Mines and Geology. Butte, MT.

Help us conserve our natural resources ...

... although every effort is made to accurately maintain our mailing lists and control duplications, **we need your help** to save paper and reduce mailing costs.

If you currently receive the *Big Sky Clearwater* and wish to be removed from our mailing list; if you receive more than one copy of the *Clearwater*; or, if you wish to make other changes, please call us at (406) 444-2406 --- or send us your mailing label --- so we may make the proper corrections. Thank you ... ☺

"Gee Whiz" . . . Water Quiz

1. What percent of all the Earth's water is freshwater?

2. Where is the greatest amount of freshwater found on the Earth?

3. Once evaporated, a water molecule spends how many days in the air?

4. How many gallons of water a day are carried across the U.S. in the atmosphere?

5. What percent of this atmospheric moisture falls as precipitation each day?

6. What percent of a living tree is water?

7. On average, what percent of the adult body is water?

8. What percent of your brain is water?

9. About how many gallons of water are recycled through our kidneys each day?

10. How much water is used to brush your teeth?

11. How much water is used to flush a toilet?

12. A 10-minute shower uses about how many gallons of water?

13. How much water do you use to take a bath?

14. How much water is used by the average automatic dishwasher in one cycle?

15. What percentage of the Earth's freshwater supply is available for human consumption?

16. How many gallons of water are needed to produce one egg?

17. How many gallons of water does it take to produce a bushel of wheat?

18. How many gallons of water does it take to process of meal of a ¼ lb. hamburger, an order of fries, and a soft drink?

19. About how many gallons of water does it take to process the food in a Thanksgiving dinner for eight?

20. How many gallons of water does it take to produce one average-size Sunday newspaper? How many newspapers are printed every day?

21. How many gallons of water are used to produce the average domestic auto, including the tires?

22. How many gallons of water can one gallon of gasoline contaminate?

23. How many gallons of water does the average American use in a day?

24. On average, how much does it cost each day to supply each American's water needs?

25. The U.S. spends billions of dollars on water management. Can you think of some ways this affects you?

ANSWERS

#1 3%, **#2** Polar ice caps, **#3** 10 days, **#4** 40 trillion gallons, **#5** 40%, **#6** 75%, **#7** 65-70%, **#8** 75%, **#9** 400 gallons, **#10** 2 gallons, **#11** 2-7 gallons, **#12** 55 gallons, **#13** 25-50 gallons, **#14** 12-20 gallons, **#15** 1%, **#16** 120 gallons, **#17** 20,000 gallons, **#18** 17 gallons, **#19** 47,674 gallons, **#20** 150 gallons, 62.5 million, **#21** 39,000 gallons, **#22** 750,000 gallons, **#23** 200 gallons, **#24** 27 cents, **#25** e.g., drinking water, wastewater treatment, sport and commercial fishing, recreation, crop irrigation

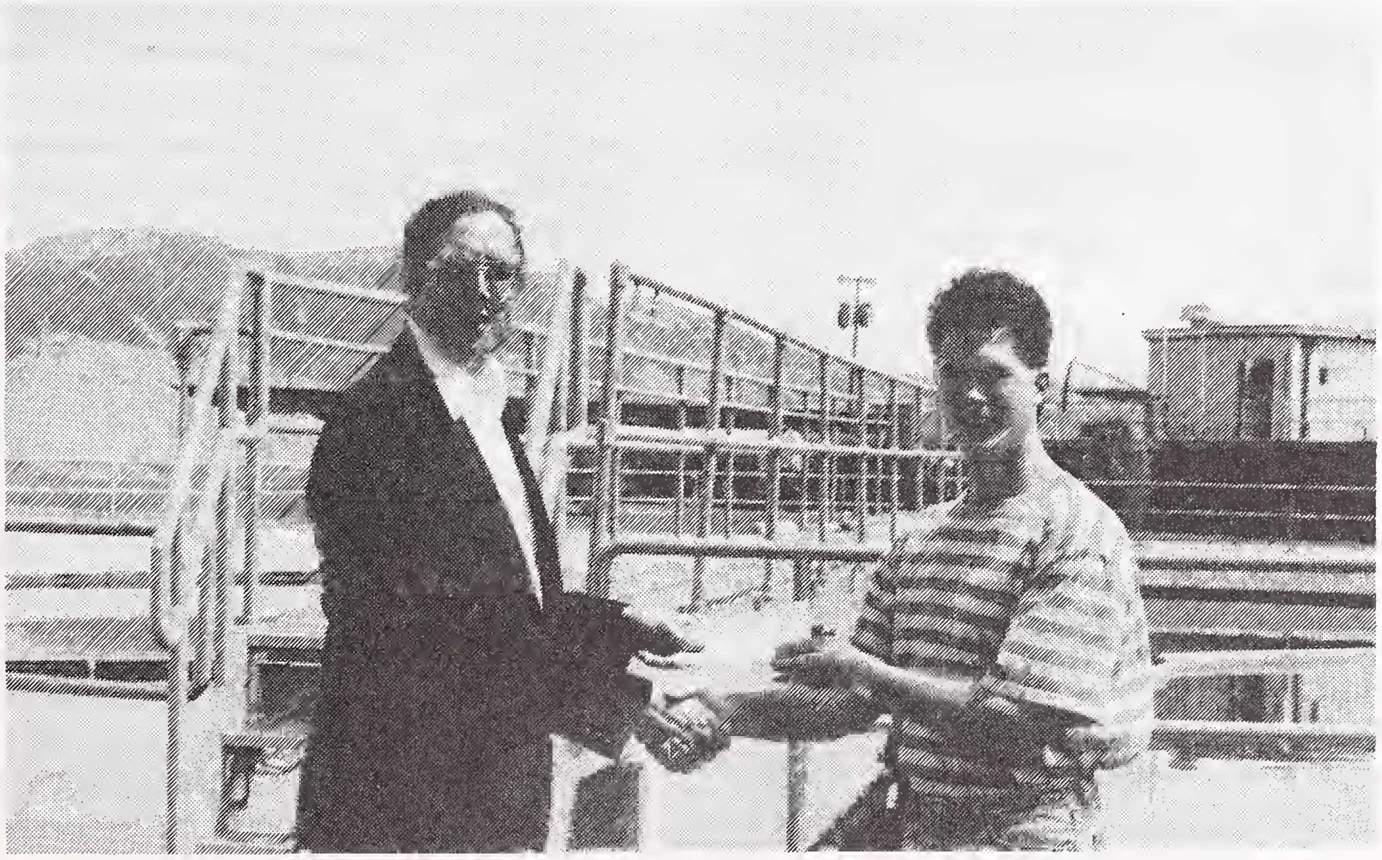
America's Clean Water Foundation
444 N. Capitol St., NW, Suite 330
Washington, D.C. 20001
(202) 624-7833

Don Willems' Scholarship

This year the Don Willems' Scholarship was given to Mark Severson. Mark was a senior at Montana Tech in Butte and was majoring in Environmental Engineering.

Mark is a native of Hutchinson, Minnesota, and studied at Iowa State University until 1990 when he decided to come to Montana Tech. During his interim at Tech, Mark not only was a leader in class, but also took part in many community projects as well. Mark simultaneously served as president of four different organizations, including the student chapter of the Water Environment Federation which he worked so diligently in starting. His involvement in civic projects earned him the respect of many local citizens and groups.

Montana Tech and the Butte area will miss Mark and his involvement with the school and community. We wish Mark well in his future endeavors.



Inventory of Concentrated Animal Waste Disposal Areas In Montana

by Carolyn V. DeMartino, WQB

The Montana Department of Health and Environmental Sciences - Water Quality Bureau (WQB) Ground Water Program has received funding to conduct a statewide inventory and characterization of concentrated animal waste disposal areas. Animal waste disposal areas are where wastes from concentrated numbers of confined animals are stored. A feedlot is a concentration or confinement of animals or poultry in pens or houses wherein the animals or poultry are fed at the place of confinement and crop or forage growth or production is not sustained in the confinement area. Sewage systems that serve 10 households are required to undergo review and be approved by the WQB prior to construction. The waste from ten 200-pound hogs is equal to the sewage from 10 households. Most of the sewage disposal systems at animal operations are not reviewed. While many animal operations in Montana are well run where manure is collected and land-applied for fertilizer, the WQB believes some of these operations inadvertently discharge to streams, allow wastewater to seep to ground water or over-apply manure to the land.

The purpose of this study is to conduct an inventory to determine the approximate number of concentrated animal waste disposal areas and where they are located in the state and to characterize these areas to determine if they could potentially impact state waters. The goal of the WQB is to have agricultural animal waste management conducted in a manner that does not impact state waters, especially ground water which is used for drinking water.

Although small operations also have the potential to pollute surface and ground waters, the focus of the project will be on confined animal operations with 100 or more cattle, swine, sheep, horses, and/or poultry. These feedlots and their associated animal waste disposal areas, if situated in permeable soils above shallow alluvial aquifers, may have the greatest potential to impact state waters. Ground water, surface water, and wastewater samples will be collected at these sites if appropriate sampling locations are available. Water samples will be analyzed for total organic carbon, nitrogen content, ammonia, coliform bacteria, and total dissolved solids. Field temperature, pH, and specific conductance will be recorded at the time the samples are collected.

Many owners/operators of confinement operations may not be aware that they need to obtain a Montana Pollutant Discharge Elimination System (MPDES) Permit. Facilities must be designed, constructed, and operated to contain all process generated wastewaters plus the runoff from a 25-year, 24-hour rainfall event or a like amount falling during any 15-day period. The MPDES permit allows the operator to discharge wastewater resulting from animal confinement facilities to state waters whenever persistent and/or disastrous rainfall events cause an overflow of process wastewater. Owners/operators of confinement operations that do not have a discharge permit, but should, will be notified that they must apply for an MPDES Permit. Currently 54 confined animal feedlots in Montana operate with a MPDES Permit.

Organizations that serve Montana producers have already shown great interest in the project. Members from these organizations and representatives from federal and state programs will be invited to participate on the advisory committee for the project. Cooperation between the many producer groups and the WQB will make this project a success.

Cooperative Watershed Protection Projects Target Western Montana River Basins

by Gary Ingman, WQB

The Montana WQB is participating in several cooperative watershed protection projects in western Montana river basins.

The Blackfoot Challenge Coordinating Council is composed of citizen groups, state and federal agencies, and private industries and is pursuing cooperative resource management in the Blackfoot River drainage. The river, made famous by the release of Robert Redford's film, "A River Runs Through It," suffers from historic mining impacts, extensive logging, and other nonpoint source inputs of sediment, nutrients, and metals. With the help of an EPA grant, the Bureau is facilitating improved information management and exchange in the basin through the use of a GIS system developed for the Blackfoot Basin by EPA's Environmental Monitoring Systems Laboratory in Las Vegas. In time, the Bureau hopes to see the Blackfoot GIS coverages expanded and the system fully used as a decision-support mechanism for integrated resource management in this basin.

The Kootenai River Network is tackling the challenge of improving communication and coordination among water resources managers in the Kootenai River Basin of Montana, Idaho, and British Columbia. Members include state, federal, provincial, and tribal government representatives and citizen groups. The Network will develop water quality management goals and objectives and will formulate an interstate-international monitoring strategy upon completion of a basinwide water quality status report, currently under development. Water quality concerns in this large river basin include the effects of hydroelectric dams, logging, historic and current mining, and industrial discharges.

Tri-State Water Management Plan: The states of Montana, Idaho and Washington, along with EPA Regions 8 and 10, have finalized a three-state water quality management plan for the 25,000 square mile Clark Fork-Pend Oreille Basin. The watershed includes the Clark Fork River and its tributaries, and Lake Pend Oreille and the Pend Oreille River. The management plan follows three years of research by the Montana and Idaho Departments of Health and the Washington Department of Ecology, and makes recommendations for the control of point and nonpoint sources of nutrient pollution. Nutrients and eutrophication are the basin's most significant interstate water quality problems. The project was mandated by Congress under Section 525 of the 1987 Clean Water Act Amendments.

A next step will be the creation this fall of a Tri-State Implementation Council composed of various government, tribal, and private sector representatives. The Council will be charged with securing funding and coordinating implementation of action items outlined in the management plan.

For more information about the WQB's water management activities, contact Gary Ingman at (406) 444-5320.

MWEA SMALL SYSTEM AWARD presented to CORVALLIS COUNTY SEWER DISTRICT

by Scott Anderson, WQB

The second annual Montana Water Environment Association Small System Award for exemplary operation, maintenance and administration of a small wastewater treatment system was presented to the Corvallis County Sewer District at the 1993 Annual Conference. The Corvallis system is a small, two-cell aerated lagoon facility which uses infiltration/percolation cells for discharge of the treated effluent (see photos on following page). The plant was built in 1981 for a design population of 510 persons. Morrison-Maierle/CSSA, Inc. was the design engineering firm for the system. Although recently retired, Cliff Ottinger has been the operator for the system since it was built and the facility reflects his excellent work in keeping the system well-maintained. **Congratulations** go to all the folks working for the Sewer District for this well-deserved recognition!!

* * *

NEW NAME IS OFFICIAL!!

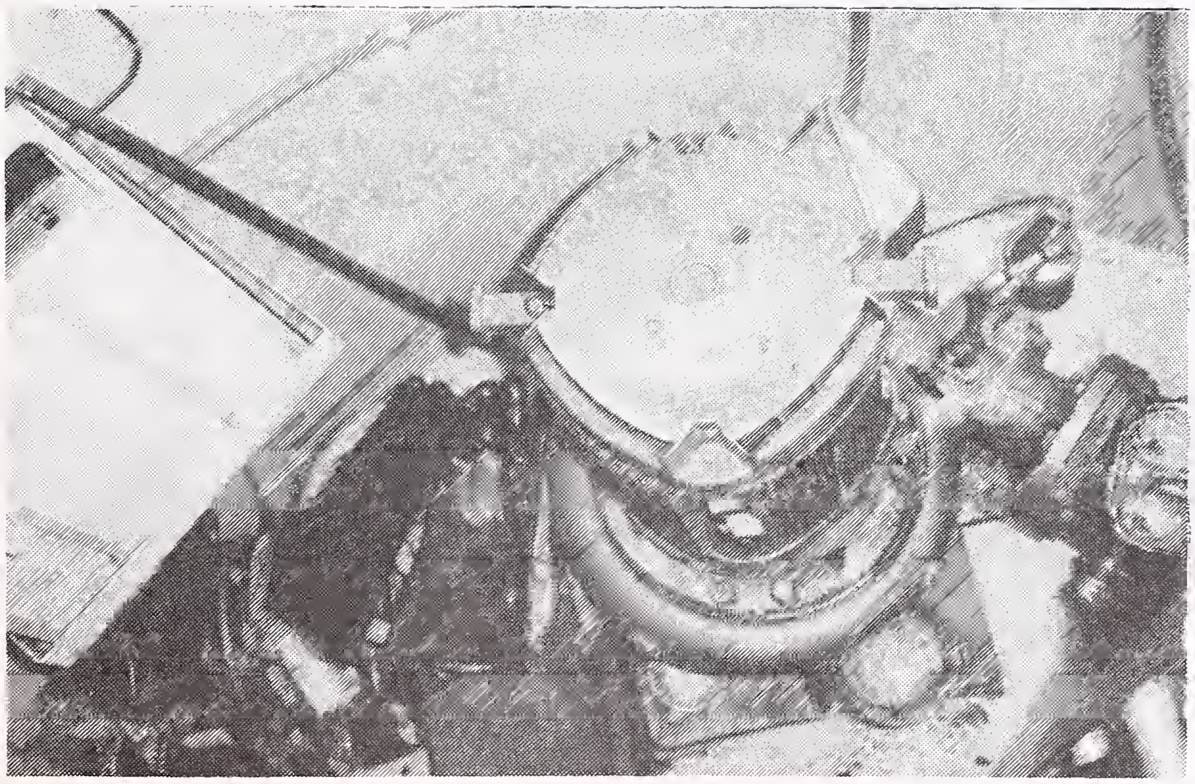
The group which started out as the Montana Sewage Works Association, and was most recently called the Montana Water Pollution Control Association, has now been named the Montana Water Environment Association. During the 1993 business meeting members present officially voted on the new name. Members not attending also had the opportunity to vote. The new name is consistent with the name change by the national organization which is the Water Environment Federation. The new name reflects the variety of issues facing professionals working in the field of water today.

Corvallis County Sewer District
MWEA "Small System Award" Winner

December 1992 Inspection Photos

Shop with perc pond in back.

Perc pond.


Lift station.

Montana WEA

LOGO CONTEST

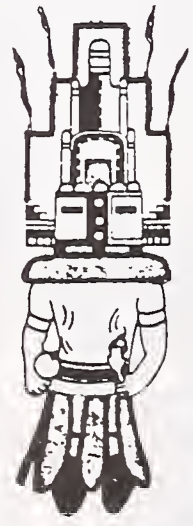
by Bill Bahr, WQB

Our organization has a new name and would like to select a new logo.

Montana WEA is offering a $50.00 CASH prize to the designer of the new logo. Many other state associations have distinctive designs which feature unique aspects of their state or region and/or cultural heritage (see samples below).

MWEA Executive Committee will select the winning design from all entries submitted. The current logo for our state association (see inside front cover) has been the same since the beginning of this group. Recently, WEF changed its logo to a modern graphic style which symbolizes a cascade. We could adopt it, or design our own! All submissions will be considered. Send your entry, by October 31, 1993, to:

Logo Contest
Attn: Bill Bahr
MDHES/WQB
P.O. Box 200901
Helena, MT 59620-0901



PACIFIC NORTHWEST POLLUTION CONTROL ASSOC.
1935

Getting to know your MWEA Executive Board Officers

by Bill Bahr, WQB

Many of you have not had the opportunity to get to know or work with the dedicated souls who serve on the MWEA Executive Board. In order to correct this situation, I thought I'd tell you a little about them in this issue and continue in future issues to introduce the gang spending all those long, long hours bringing you things like this *Clearwater*, the annual MWEA/MSAWWA Joint Conference, and training sessions.

This picture, taken on Bourbon Street in New Orleans last year at the Water Environment Federation Conference, includes: Tim Hunter, past PWOD Director, Dusty Kline, Craig Brawner, MWEA President, Barry Damschen, MWEA National Director, Linda Brawner, Kristi Kline, past WEF Committeeperson, Scott Anderson, Past MWEA President, and Patti Damschen.

At the MWEA/MSAWWA Joint Conference held in Butte in April, Craig ascended to the president's position, Tim was awarded the State of Montana MWPCA (MWEA) Award, and Scott was presented with the MWEA Service Award.

Tim is the Superintendent of the Wastewater Division for the City of Missoula. President Brawner is an engineer for the City of Bozeman. Both worked for the Water Quality Bureau for many years. Barry, also an engineer, owns the engineering firm, Damschen and Associates, in Helena. Kristi manages the Havre Wastewater Treatment Plant and was recently selected to be the At-Large member of the Montana Environmental Training Center Steering Committee. Scott is an engineer and heads up the Municipal Wastewater Assistance Program for the Water Quality Bureau.

Membership Application 1993

1 Send Completed Application and Payment to:
WEF, Financial Management
601 Wythe Street • Alexandria, VA 22314-1994, USA
For more information, call 1-800-666-0206 or FAX 703-684-2492

Association Choice: (Please print or type)
Select one from the list on back of this form.

Use this application to join the Water Environment Federation and your local Member Association. Simply complete this application and return it to the address above. Along with your monthly publications, you are also entitled to group insurance, technical assistance, discounts on technical publications, and much more!

2 First Name, Middle Initial (11) Last Name (16) (Jr., Sr., etc.) (3)

Mailing address: ☐ Business or ☐ Home

Business Name (if applicable) (30)
Street or P.O. Box (30)
City (18) State (2) Zip Code (9) Country (12)
Telephone – Home (10) Business (10) FAX (if applicable) (10)

3 Please refer to facing page marked "periodicals" when completing this section.
Employer Code (2) Other (please specify) **Job Title Code** (4) Other (please specify)
Education Code (2) **Fields of Interest** (2) (2) (2) (2) (2) (2) Other (please specify)

4 **WEF Sponsor** (Optional) (20) Sponsor's Member I.D. Number (7)

Source Code 011 (2)
(For WEF Use Only)

5 **Membership Categories: Chose one membership category and fill in the approplate dues.**
* Note: Retired? Call the WEF Member Services Center at 1-800-666-0206 to find out about our retired membership category.

☐ Active

For individuals involved or interested in the advancement of knowledge pertaining to water quality.

Dues $ 70.
Dual* $ 5.
Select ONE Included
☐ **WE&T**
☐ **Water Environment Research**
Highlights Included
Additional Publications (See box below)
Periodical Code Cost $
TOTAL $

☐ Operations Division

For Individuals working on a day-to-day basis in (or retired from) a wastewater collection, treatment, or laboratory facility.

Dues $ 40.
Dual* $ 5.
Forum Included
Highlights Included
Additional Publications (See box below)
Periodical Code Cost $
TOTAL $

☐ Student*

For individuals enrolled at least half-time in a college or university.

Dues $ 22.
Dual* $ 5.
Select ONE Included
☐ **WE&T**
☐ **Water Environment Research**
☐ **Forum**
Highlights Included
Additional Publications (See box below)
Periodical Code Cost $
TOTAL $

☐ Corporate

Corporations engaged in the design, construction, operation or management of water quality systems. One person is entitled to receive Membership benefits.

*Dues $ 180.
Dual* $ 5.
WE&T Included
Water Environment Research Included
Forum Included
Highlights Included
Water Regulation Watch Included
Additional Publications (See box below)
Periodical Code Cost $
TOTAL $

6 *If you would like to join more than one Member Association, please incidate which association(s) you would like to join and write the Association's Dual dues (See back of form-last column) in the appropriate box above. WEF will track no more than three additional associations.

Indicate Additional Association(s) Here (No more than three)

Additional Publications

One or more of the following WEF periodicals may be ADDED to your membership package if they are not already included. Please enter the Periodical Code and Cost in the allocated space above

	Periodical Code	Cost
Water Environment & Technology	WET	$30.00
Water Environment Research	RJ	80.00
Operations Forum	OF	25.00
Bench Sheet	BS	35.00
Water Regulation Watch	WRW	36.00
The Job Bank	JB	36.00
Safety & Health Bulletin	SB	14.00

*A photocopy of current student ID is required with Application.

7 **Method of Payment**

☐ Check Enclosed:
Make Check Payable to WEF
☐ Charge my: ☐ VISA ☐ MC ☐ AMEX ☐ Diners Club

Account Number Expiration Date

Signature Daytime Phone No.

Postage Requirement: Dues allocated for publications when included in membership: WE&T – $30; Water Environment Research –$30; Highlights –$15; Operations Forum – $25; Water Regulation Watch–$35

Montana's SHINING Treatment Plants

by Bill Bahr, WQB

The **City of Chinook** and the **City of Missoula** have received the Region VIII Environmental Protection Agency's Excellence in Operations and Maintenance Awards for 1993. More information on the awards and pictures of the plants, operators, and presentations will be included in the next *Clearwater*. Chinook won the Small-Secondary Treatment Plant category. Missoula took the gold in the Medium-Secondary Treatment division. Both communities are to be congratulated, and the operators and managers of these plants deserve a great big "WAY TO GO!!!" from all of us.

UPDATE ON FILTRATION FORMS

by John Camden, WQB

I have spoken with many of the operators in the state regarding the new filtration forms that are being used to monitor compliance with the Surface Water Treatment Rule. The format of the forms has not changed but some minor wording has taken place either on the form or in the footnotes. As of this writing, the only change has been made to Form #1 (F-1).

"Water Treated" has been changed to "Effluent Water Produced for Distribution" to clear up any confusion as to what water is to be reported. Next, the pH for raw and treated water and the raw water turbidity is to be reported from either a grab sample taken daily or the average reading that is computer-generated. For coagulant name, the brand name should be used.

Another comment that has been brought to our attention is to include the reporting of the chlorine residual in the distribution compliance form. No decision has been made on this, and I will keep everyone posted.

Please call me at 444-4019 if there are any comments or suggestions on the reporting forms. Sorry, but the forms cannot be eliminated, abolished, or suspended (or any other words that you might choose!).

DANGER LURKS ALL AROUND US !!

by Bill Bahr, WQB

THE HEADLINES: Woman overcome by foul atmosphere in school basement ends up in hospital.

THE STORY: One morning earlier this year, while the Edgar school was still in session, Ada Weatherford, School District Clerk and all-around handyperson, attempted to clean up a "wet" basement area under the stage in the gymnasium-stage-kitchen complex at the Edgar school. She ended up in a Billings hospital for four days instead.

Ada, being the hard-working, conscientious person she is, wanted to clean up after a recent sewer rooting of the pipes located under the stage. Apparently, there was some smelly liquid and other debris left behind. Ada describes the smell from the space as "rotten." Ada and her daughter entered the space and started cleaning. Her daughter carried material from the space, while Ada worked inside. There were no windows or doors to help ventilate the space.

About 10:00 a.m., she went back to the other school building where classes are held after informing the school cook and the school aide that she was feeling a little ill. She went into the women's restroom and doesn't remember anything after that until waking up at about 5:00 p.m. in the hospital. The aide had followed Ada into the restroom and found her writhing and unconscious on the floor.

The Edgar Fire Department responded, and the ambulance from Joliet came to take Ada to Billings, some 38 miles away, where she remained for the next four days. The Fire Department ventilated the space with fans until it was safe to complete the cleanup. They suspect that as Ada was cleaning and stirring up the pool of wastewater, harmful gases from the decomposition were released to the atmosphere of the subspace. No food was prepared in the building until the area was cleaned and declared safe.

Ada says she still feels the after-effects of her exposure. Her lungs feel somewhat congested, she coughs, and has to clear her throat more often. She believes the conditions will pass in time, however. In remembering what it felt like, Ada said, "You don't think there's something there. You're just cleaning up." Obviously, this is something that we all need to be aware of, especially working in the wastewater treatment field.

Remember, others depend on us, so DON'T TAKE CHANCES with what looks like innocent spaces, but which are actually life-threatening CONFINED SPACES. Hydrogen Sulfide deadens the senses, so you can't trust your nose; Methane and Carbon Dioxide lower Oxygen levels, which is deadly and affects your judgment; and, harmful pathogens can infect us as we work in close quarters with septic sewage. Conditions in spaces with poor ventilation change constantly. **You may be okay at one time, and be dead the next.**

THE REST OF THE STORY: Those of us who perform the physical labor in treatment plants often take chances with our lives that we wouldn't want a loved one to take. Like Ada says, "I'm glad it happened to me and not someone else." I'm not glad it happened to Ada, are you? A word to the wise, if we'll just heed the warnings:

IDENTIFY all spaces for the possibility of becoming a coffin;

PLAN for successful ENTRY AND EXIT for work in these spaces;

ESTABLISH workable RESCUE/EMERGENCY PROCEDURES;

TRAIN all workers in the CORRECT PROCEDURES for CONFINED SPACE work.

NEWS from the Montana Water Environment Association

by Barry Damschen, Director

As the incoming Director of our Association, there are several items to report to the membership. One of the most important is the name change that was approved at the annual conference in Butte this spring. At that meeting our official name became the **Montana Water Environment Association**. (This replaces the old name of the Montana Water Pollution Control Association.)

At the Regional Conference held this June, several topics of conversation were brought up and discussed. These included the final discussion of the vision statement for the Federation which is **"WEF will be the pre-eminent organization dedicated to the preservation and enhancement of the global water environment."** It has been in the development stage for the past two years and, the statement as proposed, is scheduled to be approved at the board meeting in October.

A second important issue is the introduction of a proposal to the U.S. Congress to establish a U.S. EPA-managed national wastewater certification and training program. Our Federation has developed a position statement which opposes this proposed federally-managed certification program and recommends that each state have their own certification program. I would appreciate any input that the members may have on this issue. Please call me at (406) 449-8627.

Another interesting item of business that was discussed at the regional meeting was in what capacity (if any) the Federation should take to provide disaster relief. Since there is a wide range of varied response to this issue, a special session is being set up with the Board of Directors to further discuss and decide as to what the National Federation and local State Associations should be ready to provide.

There were several other topics discussed at the regional meeting but space does not allow them all to be described in this publication. The Federation has grown in membership to over 40,000 which represents a six percent increase from last year. The membership is also expanding to new countries every year, which is making the challenges to the Federation more exciting and rewarding. I encourage all the current members of our Association to take a more active role by participating on committees when possible. Also, if you are in the wastewater or other environmental field, I encourage you to look into becoming a member of our Association. I have found this Association to be very interesting and rewarding, not only professionally but socially as well.

DEPARTMENT OF
HEALTH AND ENVIRONMENTAL SCIENCES
WATER QUALITY BUREAU

COGSWELL BUILDING
1400 BROADWAY

STATE OF MONTANA

FAX (406) 444-1374

PO BOX 200901
HELENA, MONTANA 59620-0901

EXAMINATION NOTICE

ON FRIDAY---------------OCTOBER 1, 1993-----------8:30 A.M. TO 12:30 P.M.

examinations for certification as a Water Distribution Systems Operator, Water Plant Operator, and Wastewater Plant Operator will be administered in **BALLROOM C** of the **STRAND STUDENT UNION, MSU, BOZEMAN.**

The examinations will be given at the conclusion of the annual Water School jointly sponsored by the Water Quality Bureau, Montana Environmental Training Center, and Montana State University and held on the MSU campus September 27-30. Attendance at the school is not required in order to take a certification examination. **However, anyone planning to take an examination must complete a certification application AND examination registration slip before September 17, 1993, and send it to:**

Water/Wastewater Operator Certification
Water Quality Bureau - P.O. Box 200901
Helena, MT 59620-0901 (Phone: 444-2691)

To verify that you plan to take the examination on October 1, 1993, complete the examination registration slip below and remit $5 per examination. Make checks payable to DHES, OPERATOR CERTIFICATION. Fees which must accompany completed application forms for certification are $30 per any water distribution and/or water treatment type and classification; and $30 per any wastewater type and classification. Examination fees should be added to application fees and are $5 per examination.

Pre-registration is requested for Water School. Fees for the school are payable to MSU with pre-registration or at the beginning of Water School on September 27.

PLEASE RETAIN THE UPPER PORTION OF THIS NOTICE.

EXAMINATION REGISTRATION SLIP
(Detach and return with $5 per exam by September 17, 1993)

On October 1, 1993, I will take the examination(s) I have checked below:

Type	Class	1	2	3	4	5
Water Distribution	(A)	___	___	___	___	___
Water Plant or Well	(B)	___	___	___	___	___
Wastewater Plant	(C)	___	___	___	___	

*Note: Combination examinations are offered for 2A3B, 3A4B, 4AB and 5AB and require $5 examination fee only.

NAME: ________________ ADDRESS: ________________ SYSTEM: ____________

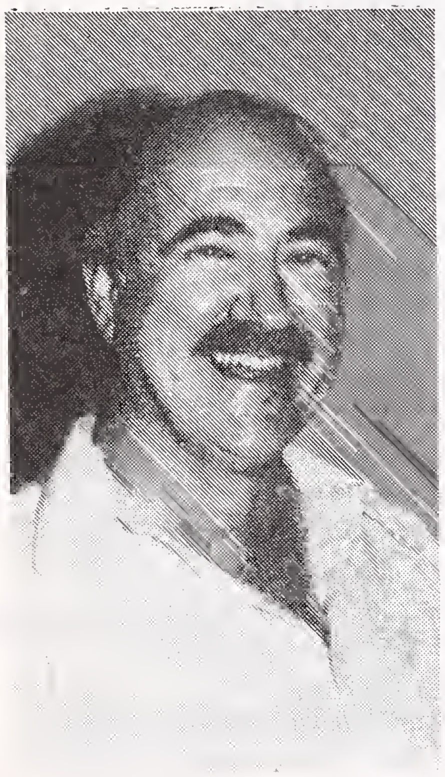
"AN EQUAL OPPORTUNITY EMPLOYER"

THE GOOD NEWS... ...AND THE BAD NEWS ABOUT CERTIFICATION

by Rosemary Fossum, Certification Officer, WQB

The good news about CEC's is that you have most of a year left to get your credits earned before time's up. THE BIENNIUM BEGAN JULY 1, 1992, AND ENDS JUNE 30, 1994. Yea! That's even better news if you make continuing education an opportunity rather than a chore. The secret? Choose training you need and want; avoid repeating seminars unless you need a refresher; be an active participant at seminars. More good news: at last our office has a computer program that keeps your CEC records.

BAD NEWS: THE WATER AND WASTEWATER OPERATOR CERTIFICATION ADVISORY COUNCIL must bid goodbye to MSU's Dr. Howard S. Peavy who leaves Montana to chair the Civil Engineering Department at the University of Idaho, Moscow.



Howard has served on the council since October 16, 1977, representing "the faculty of a university or college whose major field is related to water supply systems, wastewater treatment, chemical or civil engineering, chemistry or bacteriology" (2-15-2105(c)).

As co-director of Water School for 19 years, Howard is a familiar face to operators. Howard says he has always enjoyed water school. "It's my touch with reality," he says, "something apart of the university's ivory tower."

Sadly we report that GARY SMITH, of Cut Bank, passed away on April 23, 1993. Gary was on the advisory council for two six-year terms. A Cut Bank park has been named in his honor.

IT'S GOOD NEWS that by law, we require certified operators to be IMMEDIATELY AVAILABLE to keep our water safe to drink and our state waters safe from pollution. It's bad news when they are NOT IMMEDIATELY AVAILABLE. Why? Because in the event of contaminated samples or wrongful waste discharge, DHES staff will contact the certified operator pronto to take action to protect the health of water users or prevent pollution to state waters. Certified operators, if you leave town or are otherwise not available to DHES personnel or your water or sewer district, you **MUST have a back-up certified operator** who can be called in your absence to take any necessary action until your return. The backup operator and phone number must be known by system users and DHES staff. A certified operator is "on call at all times who can be contacted immediately and be at the site within a short period of time." (16.18.206(1)ARM

CAN A CERTIFIED OPERATOR BE SUED OR A SYSTEM WHICH DOES NOT HAVE THE LEGALLY REQUIRED CERTIFIED OPERATOR? We live in litigious times. It's possible to file suit over most anything. Winning a suit is quite another matter. Suits against responsible operators doing their jobs will not be won. However, systems without the legally required certified operator are not easily defended from suits.

CERTIFICATION APPLICATIONS AND FEES FOR THE FALL EXAMINATION ARE DUE NOW. New operators need to apply well ahead of water school in order to be well-prepared for the certification examination. The idea that an operator can learn everything he needs to know in order to pass the examination just by attending water school is ancient history. New operators should read study material thoroughly before water school ever starts. If you need an application, call 444-2691. If necessary, leave your request on our voice message.

THE NINE WITH YOUR OPERATOR NUMBER on your renewal notice is a mailing list indicator number, nothing more.

PASSING EXAMINATIONS FOR FULL CERTIFICATION OR OPERATOR-IN-TRAINING (OT) 3/13/93

Class 1:

Leslie A. Anderson, Havre,1C-ot
Denise L. Biggar, Havre, 1C-ot
Brian J. Boland, Great Falls,1C-ot
Budd Breining, Yellowstone NP,1C-ot
Benjamin Crater, Havre, 1A-B-ot
Donald Coffman, Havre, 1C-ot
Matthew Delong, Havre, 1A-B-C-ot
Kevin Durocher, Havre, 1C-ot
Randy Gebhardt, Havre, 1A-B-ot
Scott Gilden, Havre, 1C-ot
Duane Gopher, Box Elder, 1C-ot
Douglas Holzhausen, Havre, 1C-ot
Douglas Hahn, Havre, 1C-ot
Henry Hayes, Wolf Point, 1C-ot
Tyler Ingraham, Havre, 1C-ot
Clay Jensen, Missoula, 1A
Larry Lambert, Billings, 1D
Jim Orcutt, Missoula, 1A
James R. Randolph, Havre, 1B-C-ot
Rhonda Schaff, Missoula, 1A
Travis Schipman, Havre, lB
Charles Winscot, Whitehall, 1B-ot
Michael Wildy, Missoula, 1A*
Robert Volmer, Laurel, 1C-ot
Rudolf Yakich, Havre, 1A-B-C-ot

Class 2:

Robert Collier, Kalispell, 2A3B-ot
William Cornelius, Great Falls, 2C*
John Gebhardt, MAFB, 2A
Daniel Grieve, Great Falls, 2A*
Jason Lekse, MAFB, 2A
Rick Mitchell, Forsyth, 2A*
Richard Paugh, Chinook, 2C
Ted Zimmerman, Helena, 2C

Class 3:

Wayne Alexander, Lincoln, 3C
James Brown, Malta, 3A4B
Robert Corbally, Stanford, 3A4B
Donna Decker, Great Falls, 3A4B-ot
Gary Heggeset, East Helena, 3A4B
Clay Jensen, Missoula, 3B
Daryl Keys, Fort Peck, 3A
Mark Munsinger, Missoula, 3A4B
Jim Orcutt, Missoula, 3B
Caroline Pedersen, Great Falls, 3A4B-ot
Cecil Pratt, Hungry Horse, 3A4B
Mark Roach, Billings, 3A4B
William Ryan, Deer Lodge, 3C*
Ronda Schaff, Missoula, 3B
Ronald Strawn, Charlo, 3C*
Michael Toavs, Glacier PS, 3A
Cecil Worsley, Fort Benton, 3C
Melvin Zuidema, Great Falls, 3A4B

Class 4:

Thad Bassett, Melstone, 4C*
Debra Berndt, Bainville, 4AB
Penny Bertelsen, Sun River, 4AB
Sandra Blount, Wolf Point, 4AB
John Boland, Zortman, 4AB-ot
Deborah Callahan, Miles City, 4AB
Dennis Collins, Glasgow, 4AB
Robert Corbally, Stanford, 4C
Jerry Dean, Miles City, 4AB
Dennis Diemert, Galata, 4AB-ot
Paul Eslinger, Sidney, 4C
John Floyd, Whitefish, 4C
William Gamradt, Great Falls, 4C
Patrick Gould, Whitefish, 4AB
Gary Hillman, Hinsdale, 4AB
Randy Kerkes, Sand Coulee, 4AB
Lennis Limesand, Sun River, 4AB
Pete Mellbom, Forsyth, 4C
Doris Metz, Kalispell, 4AB
Bruce Opalka, Columbia Falls, 4AB
Thomas Possin, Lakeside, 4AB
David Ross, Missoula, 4AB
Bruce Rost, Billings, 4AB
Edgar Scott, Missoula, 4AB
Ronald Strizich, Great Falls, 4AB
John Thatcher, Kalispell, 4AB
Darrell E. Traver, Missoula, 4AB
Robert Vermulm, Cut Bank, 4Ab-ot
Vernon Warren, Bainville, 4AB
Charles Winscot, Whitehall, 4A-ot

Class 5:

Leon Baker, Glendive
Larry Burgher, Helena
Arthur Busse, Missoula
Duane Compton, Malta
Michael Dolce, Missoula
Larry Dubeau, Nashua
Jeffrey Ebert, Helena
Ken Gagnon, Chester
Clay Gilleard, Missoula
Dale Hard, Missoula
Terry Hines, Malta
Kenneth Jasper, St. Regis
Rick Kleinjan, Missoula
Gerald Koch, Billings
William Isbell, Kalispell
Paula Masbruch, Billings
Ray Miller, Nye
Henry Patterson, Columbia Falls
Robert Pierce, Polson
Merlin J. Rohlinger, Kalispell
Leon Sax, Columbia Falls
Ellen Spurlock, Missoula
Francis Stang, Anaconda
John Stahl, Grass Range
William Thompson, Columbia Falls
Alan Whitford, Sidney

* Denotes those previously certified in another classification type

SIXTIETH ANNUAL SCHOOL
FOR WATER AND WASTEWATER OPERATORS AND MANAGERS

Sponsored jointly by Montana Water Quality Bureau, Montana State University
and Montana Environmental Training Center
Monday, September 27 through Thursday, September 30, 1993
Strand Union Building, Montana State University, Bozeman

MONDAY, September 27, 1993

Registration	8:00 A.M.	Registration for Water School
Joint Session	9:30	Welcome Address School Logistics
	9:45	Certification Issues and Information
	10:15	"Hydro-illogical Cycle"
	12:00	LUNCH
	1:00 P.M.	Legal Responsibilities of Monitoring
	1:45	Citizens Perspective of System Compliance
	2:30	EPA Perspective of State Responsibilities
	3:00	BREAK
Water	3:15	True Montana Stories
	3:50	What is a Bug? Montana Systems
	4:25	Chemical Chaos - Health Effects, Movement, Treatment
	5:00	SOS: Handouts and Logistics
Wastewater	3:15	Montana Water Quality Disasters
	4:00	Clean Water Act; Montana Water Quality Act; Nondegradation

TUESDAY, September 28, 1993

Water (Joint)	8:00 A.M.	SDWA Update - Upcoming Regs
	8:30	Coliform Rule and Public Notification
	9:30	Proposed Groundwater Disinfection and DBPs
	10:00	BREAK
	10:15	Lead and Copper Compliance and Health Effects
	11:10	After Chafee-Lautenberg: What's Next? Phase II and V
	12:00	LUNCH
Wastewater (Large)	8:00 A.M.	Management of Wastewater Treatment Plants
	9:00	Application of Process Control Concepts
	10:00	BREAK
Wastewater (Small)	8:00 A.M.	Lagoon Operating Strategies
	9:00	Advanced Lagoon Techniques
	10:00	BREAK
Wastewater (Joint)	10:15	Wastewater Microbiology: Those Hardworking Wastewater Bugs
	12:00	LUNCH
Technology Applications	10:15	Collection Systems: Inspection, Leak Detection, Correction
Water (Split Sessions)		**Filtered Water**
	1:00 P.M.	Forms and Reporting
	2:00	Turbidimeters
	3:00	BREAK
	3:15	pH Meters
	4:15	Process Control Overview
		Unfiltered Water
	1:00 P.M.	NTU Meters

	2:00	pH Meters
	3:00	BREAK
	3:15	Avoiding Filtration PWS-3
	5:00	SOS
		Groundwater/Distribution
	1:00 P.M.	Meters
	3:00	BREAK
	3:15	Hydrants/Valve Maintenance
	5:00	SOS
Wastewater (Joint)	1:00 P.M.	Wastewater Monitoring and Control Equipment: Hands On!!
	3:00	BREAK
	3:15	Educating Your Public
	4:15	Chemical Safety
Technology Applications	1:00 P.M.	Chlorine Equipment and Leak Detection
	3:15	Flow Metering and Electronics

WEDNESDAY, September 29, 1993

Joint Session	8:00 A.M.	Electrical Safety
	9:00	Recognizing Confined Spaces
	10:00	BREAK
	10:15	A) - Gas Chlorination B) - Liquid/Pellet Chlorination (HTH) C) - Leak Detection
	12:00	LUNCH
Water (Split Sessions)		**Filtered Water**
	1:00 P.M.	Use of Iron and Alum Coagulants and Polymers
	1:30	Polymer/Coagulant Workshop
	3:00	BREAK
	3:15	Filtration Processes
		Unfiltered Water/Groundwater/Distribution
	1:00 P.M.	All About Aquifers
	3:00	BREAK
	3:15	Contamination Culprit in Distribution Systems
	4:15	Well, Tank and Distribution Disinfection Workshop
	5:00	SOS: Math, Volumes, Dosages
Wastewater (Joint)	1:00 P.M.	Utilities Pollution Prevention: Step-by-Step "How Waste Reduction $aves!"
	2:00	Health Considerations for Wastewater Workers
	3:00	BREAK
	3:15	Water Conservation Practices
	4:15	Sludge: What's Happening
Technology Applications	1:00 P.M.	Operators and the Construction Process
	2:00	Alternative Systems: Troubleshooting
	3:15	Aeration and Mixing Systems
	4:15	Wetlands: Treatment Possibilities for Montana

THURSDAY, September 30, 1993

Joint Session	8:00 A.M.	Disaster and Emergency Services
	9:00	Dealing with Difficult People
	10:00	BREAK
	10:15	Certification Bowl
	12:00	Wrap-up and Adjourn

NOTE: Steve Cheman will be conducting ongoing sessions with basic math, hydraulics, and chemistry each day this year.

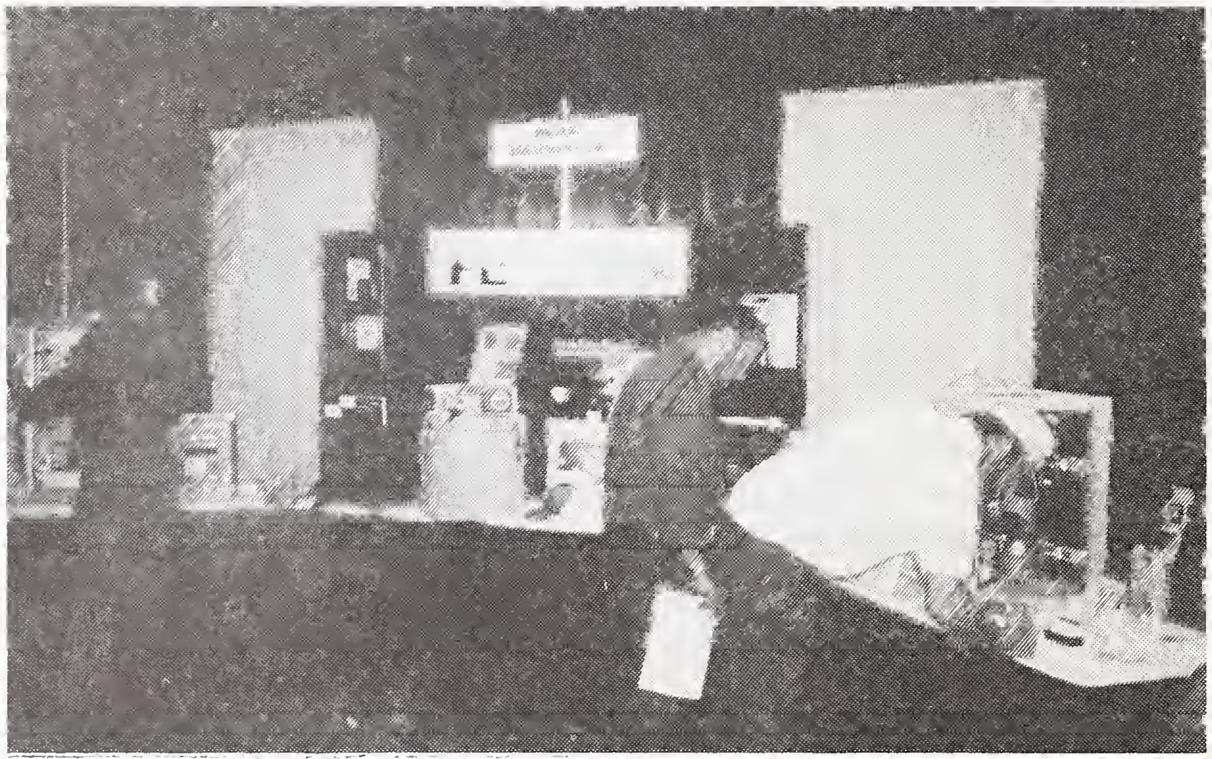
Scenes from the Joint MSAWWA/MWEA Conference
Butte - April, 1993

"See, there are these bears in Alaska, and this bush pilot is hired to..." says Michael Pollen, WEF National Officer.

What do you mean...there's no taxis in Butte? WEF and AWWA National Officers arrive in style.

The guy in the middle was responsible for choosing the menu.

The training sessions were GRREEAAATT!



Conference participants and the vendors.

Tim tells Scott how important it is to spell correctly on engraved plaques as he receives the MWPCA Award.

MWEA BOARD OF DIRECTORS/ EXECUTIVE COMMITTEE

NATIONAL DIRECTOR

Mr. Barry Damschen
P.O. Box 4817
Helena, MT 59604
449-8627

PAST PRESIDENT

Mr. Scott Anderson
Water Quality Bureau
P.O. Box 200901
Helena, MT 59620-0901
444-2406 (FAX: 444-1374)

PRESIDENT

Mr. Craig Brawner
City of Bozeman
P.O. Box 640
Bozeman, MT 59715
586-3321

PRESIDENT-ELECT

Mr. Dick Pedersen
616 Helena Avenue, Room 306
Helena, MT 59620
449-5486

PWOD DIRECTOR

Mr. Wayne Robbins, Plant Manager
Wheelabrator E.O.S., Inc.
Black Eagle, MT 59414
761-7004

VICE PRESIDENT

Mr. Bill Bahr
Water Quality Bureau
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Helena, MT 59620-0901
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SENIOR TRUSTEE

Mr. Mike Rubich
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723-8213

JUNIOR TRUSTEE

Mr. Dan Fraser
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EXECUTIVE SECRETARY

Mr. Paul Montgomery
U.S. EPA
301 South Park, Drawer 10096
Helena, MT 59626
449-5486

MSAWWA BOARD OF DIRECTORS/ EXECUTIVE COMMITTEE

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7323 Charolais
Billings, MT 59106
656-6398 (FAX: 656-6398)

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Mountain Water Company
P.O. Box 4826
Missoula, MT 59806
721-5570

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City of Conrad
411½ South Main
Conrad, MT 59425
278-5821 (FAX: 278-5751)

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Billings, MT 59105
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Missoula, MT 59806
721-4320

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197 Saddle Mountain Drive
Clancy, MT 59634
444-4114 (FAX: 444-1374)

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Mr. Henry Elbrecht
City of Helena Water Dept.
316 North Park Avenue
Helena, MT 59623
442-9920

JUNIOR TRUSTEE

Mr. Jim Melstad
Water Quality Bureau
P.O. Box 200901
Helena, MT 59620-0901
444-4549 (FAX: 444-1374)

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AMERICAN WATER WORKS ASSOCIATION

INDIVIDUAL MEMBERSHIP APPLICATION

AWWA USE ONLY

Complete this form and mail to:
AWWA / 6666 W. Quincy Avenue / Denver, CO 80235
(303) 794-7711 • FAX (303) 794-7310

PLEASE PRINT OR TYPE

Last Name ______ First Name (and middle initial) ______

Mailing Address ______

______

City ______ State/Province ______ ZIP/Postal Code ______

Area Code ______ - Telephone ______ - ______ Area Code ______ - FAX ______ - ______

Title ______

Employer's Name (If not already in mailing address) ______

Applicant's Signature ______ Date ______

Signature of AWWA Member Endorsing Application (Optional) ______ Endorsing Member Number ______

ANNUAL DUES:

$72/Active
Grade Code 02

$33/Operations (formerly Affiliate)
Grade Code 06
(For operator level personnel or employees of small utilities. Will not receive Journal AWWA.)

$24/Student
Grade Code 14

ANNUAL DUES $ ______

New England Assessment* ______

Multi-Section Option (other than own) ______

TOTAL DUE $ ______

*Applicants with an address in the New England Water Works Association Section of AWWA (ME, NH, RI, VT, MA) must include $32.00 for Active Membership, or $15.00 for Operations Membership with their annual dues.

Make check payable to AWWA (Canadian funds add 15%).

☐ MasterCard ☐ VISA ☐ Diner's Club
☐ American Express ☐ Send Invoice

Card Number ______

Expiration Date ______

PREPAYMENT OF ONE YEAR'S DUES REQUIRED
No action can be taken on this application until payment is received.

If you have been a member of AWWA before, indicate dates here:
______

☐ Please send an AWWA membership certificate.

Address shown above is (check one): ☐ Home ☐ Office

MULTI-SECTION MEMBERSHIP

You may also select a year's membership in **other** AWWA sections by circling your choices and including $14 for each section circled. Enter this total on the line reading "multi-section option".

CIRCLE SECTION CHOICES

AKA	ALASKA	IWA	IOWA	PAC	PACIFIC NORTHWEST (OR, WA & PART OF ID)
ALA	ALABAMA-MISSISSIPPI	KAN	KANSAS		
ARI	ARIZONA	KNT	KENTUCKY-TENNESSEE	PEN	PENNSYLVANIA
ATC	ATLANTIC-CANADA (NB, NF, NS, PEI)	MEX	MEXICO	PRT	PUERTO RICO
		MIC	MICHIGAN	QUE	QUEBEC
BRC	BRITISH COLUMBIA (BC, YT)	MIN	MINNESOTA	RMT	ROCKY MOUNTAIN (CO, NM, WY)
		MOU	MISSOURI		
CAL	CALIFORNIA-NEVADA	MTN	MONTANA	SCR	SOUTH CAROLINA
CHS	CHESAPEAKE (DE, DC, MD)	NDK	NORTH DAKOTA	SDK	SOUTH DAKOTA
		NEB	NEBRASKA	SOW	SOUTHWEST (AR, LA, OK)
CON	CONNECTICUT	*NEW	NEW ENGLAND (ME, NH, RI, VT, MA)		
FLA	FLORIDA			TEX	TEXAS
GEO	GEORGIA	NEJ	NEW JERSEY	VIR	VIRGINIA
HWI	HAWAII (GUAM)	NEY	NEW YORK	WEC	WESTERN CANADA (AB, MB, NT, SK)
ILL	ILLINOIS	NOC	NORTH CAROLINA		
IND	INDIANA	OHO	OHIO	WEV	WEST VIRGINIA
INT	INTERMOUNTAIN (UT & PART OF ID)	ONT	ONTARIO	WIS	WISCONSIN

*IF "NEW" ENGLAND IS A CHOICE, add $46.00. This includes their assessment and multi-section fee.

ALL APPLICANTS SHOULD COMPLETE THIS SECTION:
Circle the descriptions below that best describe you. The information is used in audits of AWWA readership. Circle only ONE in each group.

BUSINESS AND INDUSTRY

A. Public Water Supply Utility–Municipally Owned
B. Public Water Supply Utility–Investor Owned
C. Governmental—Federal, State, Local
D. Consultant
E. Contractor
F. Private Industrial Systems or Water Wholesaler
G. Manufacturer of Equipment & Supplies including Representatives
H. Distributors of Equipment & Supplies including Representatives
I. Educational Institutions, Faculty and Students, Libraries, and Other Related Organizations
J. Fully Retired
K. Research Labs
L. Unreported

JOB TITLE

A. Executive-Gen'l Mgr., Commissioner, Board Member, City Mgr., Mayor, President, Vice-President, Owner, Partner, Director, etc.
B. Management-Division Head, Section Head, Mgr., Chief Engineer, Comptroller, etc.
C. Engineering/non-managerial-Civil Engr., Mech. Engr. Envir. Engr., Planning Mgr., Field Engr., Systems Designer, etc.
D. Scientific/non-managerial-Chemist, Biologist, Biophysicist, Researcher, Analyst, etc.
E. Purchasing-Purchasing Agent, Procurement Specialist, Buyer, etc.
F. Operations-Foreman, Operator, Maintenance, Crewman, Service Rep., etc.
G. Marketing & Sales/non-managerial-Mkt. Analyst, Mkt. Rep., Salesman, Sales Rep., etc.
H. Other (describe) ______
______

CHECK FIELD(S) SERVED:

5 ☐ Water Supply Only
7 ☐ Wastewater Only
9 ☐ Both
3 ☐ Other

In some AWWA sections, a portion of the section allotment equal to 50 percent or more of the domestic subscription rate charged for the section periodical will be allocated toward a subscription of that periodical.

Dues allocated for each publication members receive:
Journal $28
MainStream $6
Opflow $5

1/93

Safety With KMnO4

by Rick Cottingham, WQB

GOGGLES or FACE SHIELD - DUST MASK - GLOVES - APRON

As spring sets in around us we find that some of the same old problems that aggravated us last year are starting to plague us again, namely objectionable stain producing materials and taste- and-odor compounds.

So its time to start applying the Potassium Permanganate ($KMnO_4$). The common or trade name for this nasty little oxidizer is "Purple Salt."

It is shipped in bulk, barrels, and in drums, and is available in purple crystals at three different grades: U.S. Pharmacopeia (USP) which is guaranteed 99% pure, Technical Grade at 97%, and Free Flowing at 95%.

$KMnO_4$ aids in the removal of Iron and Manganese by oxidizing soluble salts to insoluble precipitates. It can also oxidize many of the organic precursor compounds that form trihalomethanes and usually lower the concentration to meet EPA standards for the same.

This chemical gets along with most common treatment chemicals, but can react with some coagulant aids. Therefore, it should be applied early in your process so that its reaction is complete before the addition of alum, ferric sulfate, chlorine, or carbon, which applied in that order, will handle a taste and odor problem in combination better than any chemical alone.

Under normal conditions in a plant it is considered to be a safe chemical. BUT....being a strong oxidizing agent it WILL react with certain easily oxidized substances. **THEREFORE....it should be kept away from possible reactions with sulfuric acid or hydrogen peroxide; also, metallic powders, elemental sulfur, phosphorus, carbon, hydrochloric acid, hydrazine, hydroxylamine, and metal hydrides.**

When in contact with potassium permanganate the following compounds may ignite:

Ethylene Glycol (antifreeze)
Glycerine
Sawdust compounds
Propylene glycol
Sulfuric oxide

Potassium Permanganate should be stored in a cool, dry, protected area. There should be no heat pipes and no exposure to severe heat. The containers should be stored on concrete floors as opposed to wooden floors or pallets. Any organic solvent should be kept away from stored supplies. (This means all greases and oils.)

Spills should be swept up and removed immediately. Flushing with water is an effective way to eliminate spillage on floors.

Any fires resulting from contacts should be extinguished with **WATER!!**

Handling of potassium permanganate safely requires the use of:

1. An approved dust mask (air purifying half-mask respirator blowout)
2. Safety glasses or full face shield for protection of eyes
3. Rubber gloves
4. Long-sleeved shirt or coveralls
5. A chemically approved apron

These are recommended for both dry and dissolved product.

First aid: External: Flood contacted skin with water. If in the eyes, flush with plenty of water and call a physician immediately.

Internal: Consult a physician. Give lemon or orange juice to drink, and follow up with milk. Gastric lavage (pumping of the stomach) by a physician is the preferred method of removal. In some cases vomiting should be induced.

POST CHEMICAL SAFETY DATA SHEETS WITH PRODUCT

For further information contact:

Rick Cottingham, Water Quality Specialist
Water Quality Bureau - DHES
1400 Broadway, P.O. Box 200901
Helena, MT 59620-0901
Phone: (406) 444-4769

or contact your Chemical Supplier.

NOTE THIS

SPECIAL SEMINAR COMING YOUR WAY...

DISINFECTION/DISINFECTION BYPRODUCTS RULE TELECONFERENCE

October 15, 1993
Montana State University
Bozeman, MT

Mark Your Calendars!!

The Montana Section of the American Water Works Association will host a down-link site for the National teleconference on the new Disinfection/Disinfection Byproducts Rule for public water supplies.

This will be your first and best opportunity to learn about these upcoming regulations through an interactive national teleconference. This allows you to 'attend' a national seminar presented by experts and authorities in this field without the expense of leaving Montana.

Keep an eye out for more information. The specific costs and location will be determined soon.

Questions?? Ask Donna Jensen, Section Education Chair, at 444-4114. Preregistration forms should be coming to you in mid-August.

AWWA MONTANA SECTION DIRECTOR'S REPORT
AWWA BOARD OF DIRECTOR'S MEETING
SAN ANTONIO
JUNE 5-10, 1993

Richard A. Nisbet
Past Director Montana Section of AWWA

The annual Board of Director's meeting was held on June 5-6, 1993, in San Antonio, Texas in conjunction with the Annual conference and Exhibition. The special meeting held on Saturday, June 5th was for the sole purpose of reviewing the Reorganization for the 21st Century final report. The final recommendations from the consultant and the 21st Century Committee were discussed in great detail. The committee responded in an exceptional manner to the Board of Director's concerns that were made at the August 1992 Board meeting and the January 1993 spring meeting.

The main items that the Montana Section was concerned about were incorporated into the final document. The Small Systems committee which was formed a couple of years ago will continue to report to the Executive Committee for the next three-year period. It will be reexamined in 1996 to see if it should be continued or not. The Minority Women's Affair and International Affairs Committee will also continue to report directly to the Board for the same period of time. The other major concern was the representation of the Manufacturer's Advisory Council on the Board. The final report created a Manufacturer's Advisory Council with the same representation on the Board as other councils.

The major change in the officer's status is there will be five new vice presidents which the Board will elect from the second and third year board members. There will be three presidential officers rather than the current four. All council chairs will continue to serve on the Executive Committee so that they are well represented. The Board of Directors would increase by one (59 to 60 members) with the increase being an additional council chair. The sections will continue to be represented one per section and not by the number of members in the sections. This was a major concern of the small sections and surprisingly enough was supported by the larger sections.

After several hours of discussion, the Board adopted 17 action items to start the implementation of the Board's recommendations. There will be many additional steps required in order to implement the modifications to the Board of Directors, the Executive Committee, etc. These will have to take place during the next year or two because the Association's bylaws will need to be changed, and this is a time consuming process. The big challenge for the new director, Gerald Lukasik, will be to implement these actions and get involved with the reorganization of AWWA.

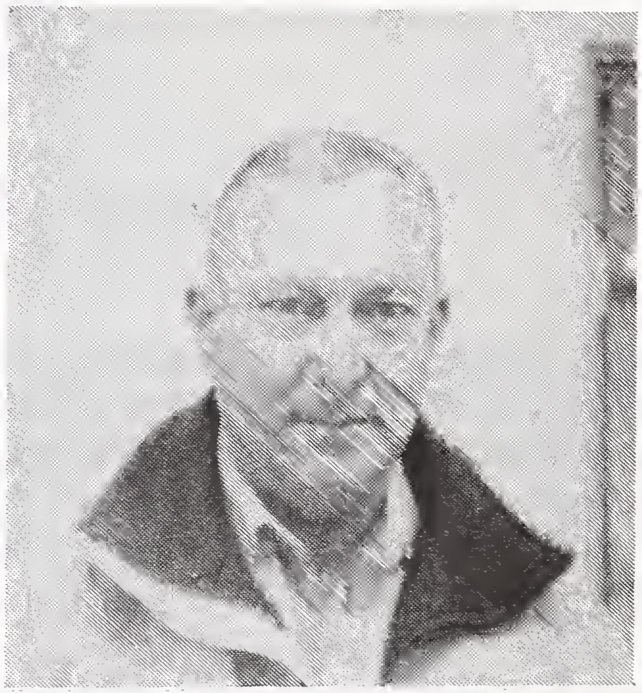
The annual conference set a new record of approximately 10,431 registrants and had one of the largest equipment shows on record.

This was my final meeting, and Jerry Lukasik was introduced at our joint meeting on Sunday, June 6th and Jerry's meeting for the new board was Thursday June 10th.

I would like to thank the AWWA Section for allowing me to serve as their director for the past three years. My wife Carol and I have made many new personal friends, and it is an experience that both of us will remember forever.

1994 Montana Section AWWA Fuller Awardee

HUGH WILKINS
WATER TREATMENT PLANT
SUPERVISOR
GREAT FALLS, MT



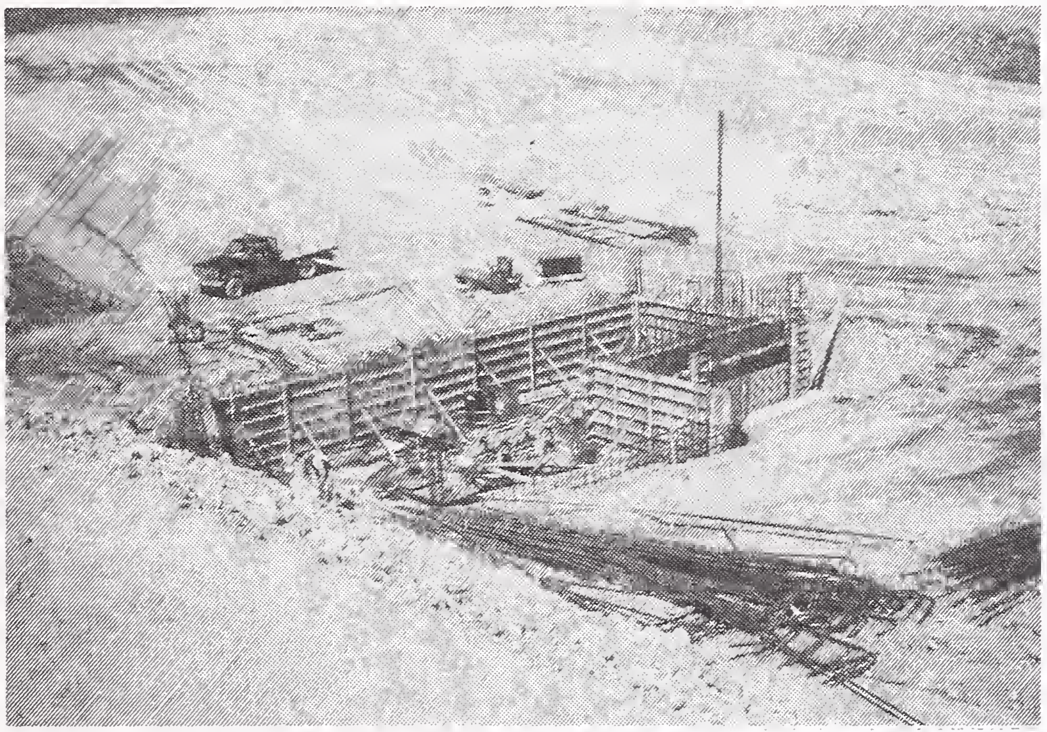
Your 1994 George Warren Fuller awardee for the Montana Section American Water Works Association was born and raised in Montana. He is a past chairman of the section and is still active on various committees. He has worked in the water works field for over thirty years. He loves the outdoors, and when he can sneak a day away from work he enjoys hunting, fishing and hiking. He also belongs to a barber shop quartet. He attended Gonzaga University in Spokane, WA.; the College of Great Falls; and Montana State University, working towards a degree in mechanical engineering. He also attended the U.S. Naval School of Aviation Science and Flight Training from 1959 to 1961. Flying has been one of Hugh's passions since he was a little boy. In 1959 he entered the flight training program with the U.S. Navy in Pensacola, Florida. During this time he made the all-jet syllabus and became aircraft carrier qualified. He was a jet pilot on the aircraft carrier Shangri-La. Hugh's love of flying continues today, as he continues to hold a private pilot's license and is currently a member and pilot for the Montana Pilots Association. He has received numerous awards from the Civil Air Patrol for outstanding duty performance, humanitarian service and life-saving. Hugh is a member of the Civil Air Patrol, and flies disaster and emergency missions and pilots mountain rescue searches.

Hugh began his career in the Great Falls water utility division as a laborer, pipelayer, storekeeper, office manager and meter & service supervisor. In 1973 he was put in charge of water plant operation, and in 1979 was promoted to the position of Water Treatment Plant Supervisor.

Hugh has been instrumental in the development of many new techniques for the treatment plant, and has actively promoted training activities of operators to find solutions to problems they might encounter in the water system. Hugh has also upgraded his skills as supervisor by staying current on topics and issues relating to the Water Treatment Plant. Through the years, Hugh has attended schools for water operators and managers at Bozeman, participated in the Board of Certification and the Joint Training Coordination Committee, and assisted in conducting a 1982 Annual School for water and wastewater operators offered by the Water Quality Bureau. The Water Journal featured Hugh in an article dealing with his work in pumping water into Montana farmlands. Hugh and his wife Darlene have six sons.

BUTTE'S WATER SYSTEM IMPROVEMENTS ♦ AWESOME !

A water system project of phenominal proportions is underway in Butte. Two filtration plants, distribution improvement and storage are scheduled for completion over the next three years. Congradulations . . . Butte America ! !



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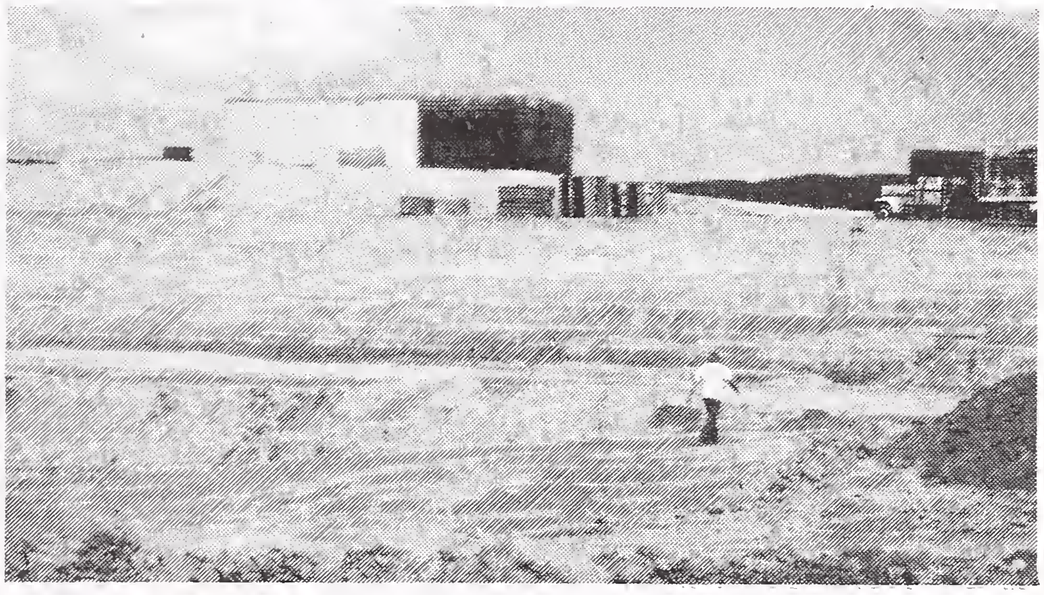
Big Hole Water Treatment Plant

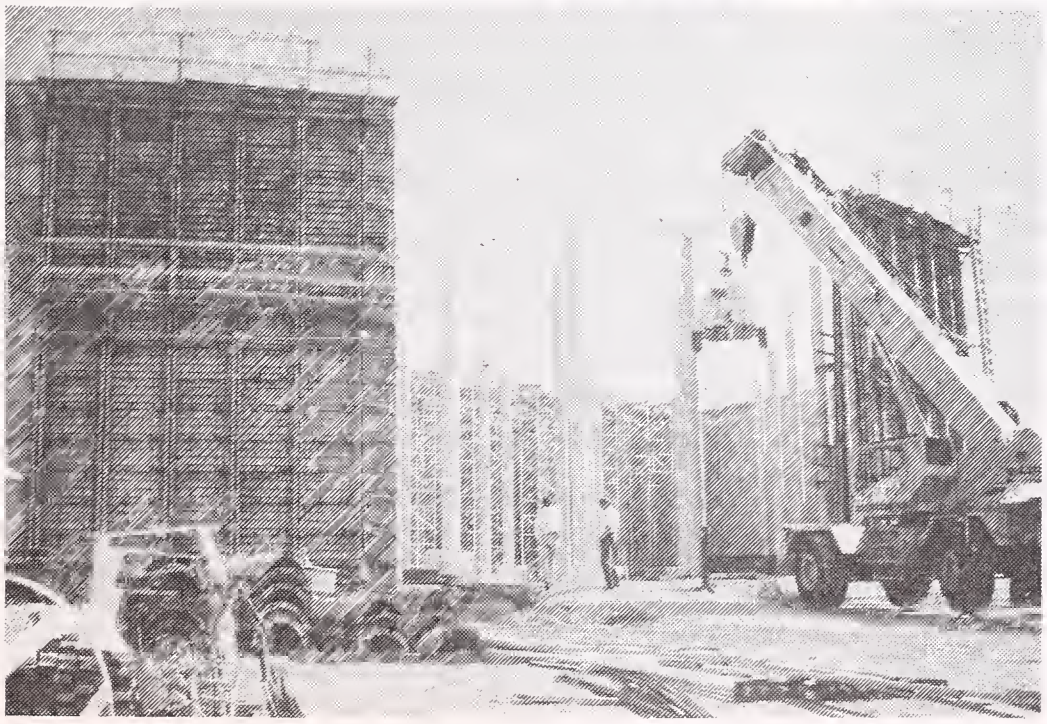
Clearwell Components for the 16 million gallons per day facility

►

Big Hole Water Treatment Plant

Raw water surge tank





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Colorado Hills

9 million gallon concrete reservoir - second largest in Montana !

PUBLIC WATER SUPPLY PROGRAM UPDATE

by Jim Melstad, WQB

Fees

Montana's public water suppliers have diligently paid their fees again this year. We collected about $535,000 in service connection fees in fiscal year 1993. This is very close to the amount that we estimated when the fees were developed. About $20,000 in plan review fees were also collected in fiscal year 1993.

We are using a significant portion of the annual fees to fund two full-time circuit rider positions for Montana Rural Water Systems. Brady Anders and Nick Clos are very actively providing technical assistance to help operators with rule compliance and operational problems. Fees are also being used to provide contracted services for plan review. This will reduce the amount of time that it takes to review plans for compliance with DHES standards. Requests for proposals will be mailed soon for a contractor to conduct sanitary surveys and for a contractor to prepare audio-visual training aids for operators and managers.

Fees and an increase in our federal EPA grant have also helped to more than double our staff from 9.5 full-time employees (FTEs) to 19.25 FTEs. Two additional half-time FTEs were approved by the 1993 legislature for a new total of 20.25 FTEs, but we have not yet received department approval to fill the positions. (The 1990 Public Water Supply Task Force recommended that the legislature approve 22.5 positions for implementation of the state and EPA rules that we are responsible for today.)

Unfortunately, the public water supply program has recently lost 3 experienced engineers to the private sector and to retirement. We will greatly miss **Roy Wells, Dave Aune and Vern Heisler** and thank them sincerely for their dedicated efforts.

We are happy to announce that we have hired **Terry Campbell** to fill one of these positions. Terry comes to us from the private sector and we welcome him aboard. Terry will replace Roy as the Lead and Copper Rule expert.

We want to **thank all of you** for the time, effort and expense that goes into payment of your fees!

Current Sampling Requirements

As you know by now, **community water systems** (systems with 10 or more service connections for year-round residents or 25 or more year-round residents) and **nontransient noncommunity water systems** (public systems that are not community systems that serve the same people at least six months of the year, like schools) **are required to sample for lead and copper and for the "Phase 2" and "Phase 5" contaminants.**

Another article in this issue by Rick Cottingham reminds operators, owners and managers of these sampling requirements. **If you are interested in sampling for organic contaminants to qualify for the provisions of the Chafee Lautenberg amendment, you need to contact a lab right away (see Rick's article)!!!**

Future Rule-Making

You should be aware of several new EPA rules that are being developed. We expect these to have very significant impacts on Montana's public water supplies.

1. Radionuclides

The final new radionuclides rule, sometimes referred to as the "Phase 3" rule, is scheduled for October 1, 1993. It is expected that EPA will set a maximum contaminant level (MCL) for radon at about 300 picocuries per liter (pci/l). (Radon can cause cancer through inhalation. It is released from water into the air by running water inside the home.) We estimate that **a majority of Montana's public water supply groundwater sources would be out of**

compliance at this level. Radon can be removed be aeration or by activated carbon.

The current MCLs for radium 226 and 228 are expected to be relaxed, but an MCL for uranium is proposed to be set at 20 pci/l. This may cause compliance problems for water supplies in areas that contain uranium deposits.

2. Arsenic

The current MCL for arsenic is 50 micrograms per liter, or 50 parts per billion (ppb). Because of increasing evidence that arsenic causes cancer at significantly lower levels, a new MCL may be proposed as low as 2 to 5 ppb. At 2 ppb, **approximately 25% of Montana's public water supplies would be out of compliance**. The rule proposal is scheduled for September of 1994. A public comment period would follow the rule proposal and the final rule is now expected in September of 1996. Arsenic levels can be reduced by electrodialysis, activated alumina, alum coagulation followed by settling, and by reverse osmosis. Treatment is typically expensive.

3. Groundwater Disinfection

The Groundwater Disinfection Rule, or the "Phase 4" rule, is scheduled to be proposed to the public in late 1994. A rough draft version of the rule proposed mandatory disinfection of groundwater unless strict conditions were met. Some of the proposed conditions included mandatory cross-connection control and strict well construction and location requirements. The final Groundwater Disinfection Rule is currently scheduled to be adopted in late 1996.

4. Disinfection By-Products (DBPs) and Enhanced Surface Water Treatment Rule (ESWTR)

This combined rule-making effort is very complex. The rule would primarily impact public water supplies that use surface water. The rule will be proposed in two stages. The first stage will likely propose an MCL of 80 ppb for total trihalomethanes (TTHMs) for **all systems**, except transient non-community public water supplies (restaurants, bars, campgrounds etc.). It will also propose new MCLs for other disinfection by-products that were previously unregulated, like total haloacetic acids, chlorite and bromate. A proposed limit for total organic carbon will also be included. Surface water supplies serving more than 10,000 people would have to meet the requirements of the rule beginning in January of 1997. Surface water supplies serving less than 10,000 people would have to meet the requirements of the rule beginning December, 1999. Groundwater supplies would have to meet the requirements of the rule beginning in 2005.

Surface water supply systems serving more than 50,000 people would also have to conduct testing to help EPA determine the potential for formation of DBPs. This information would be used for further rule development and probable further lowering of the DBP MCLs. Surface water supply systems serving over 10,000 people would have to monitor every other month for the occurrence of Giardia and Cryptosporidium. This information would be used for further development of the ESWTR.

This combined rule proposal is scheduled for March of 1994. The final rule is scheduled for December of 1996, with future revisions of the rule contemplated as discussed in the paragraph above.

5. Sulfate

EPA is still considering a standard for sulfate. The latest rumors suggest that an MCL of **500 milligrams per liter** (parts per million) is being considered.

As you can see, life won't get any simpler for those of us who work in the field of drinking water. We encourage you to try to understand the basis and purpose of these new rules so that you can help to educate your decision makers and water users. We continue to be impressed and encouraged by the efforts of Montana's water system operators and managers to meet the new regulatory requirements.

Keep up the good work and give us a call at 444-4549 if we can provide any help!

Demonstration Project for the Clark's Fork Yellowstone Valley Underway!

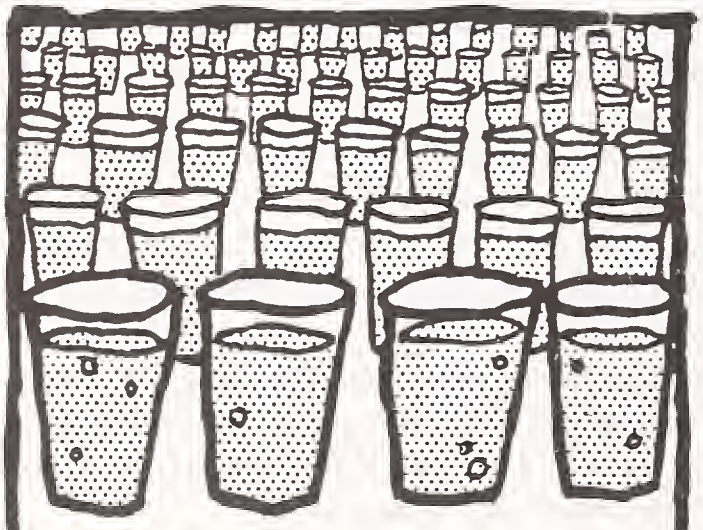
by Carolyn V. DeMartino, WQB

Two public meetings were held in Bridger, Montana, to discuss the Clark's Fork Yellowstone Valley Project (see Spring 1993 Big Sky Clearwater) with residents in the valley. The Department of Health and Environmental Sciences (DHES) - Water Quality Bureau (WQB) with input from individuals at the public meetings, decided that the project would focus wellhead protection efforts and best management practices on the Bridger Public Water Supply System.

In April, the WQB obtained permission from the public water supply managers in Bridger, Belfry, and Fromberg to sample the public water supply wells. Permission was also obtained from the administrator of Edgar Elementary School to sample the school well. During May, an inventory of potential pollution sources was conducted in Bridger, water samples were collected from the Edgar Elementary School well, and additional water sample collection sites were located. Business owners were not only helpful in providing information about their businesses but also about the countryside surrounding Bridger.

WQB personnel spent three weekends in June collecting water samples. Both public and private well managers/owners expressed genuine interest in the quality of their drinking water. A total of 165 water samples were collected from two surface water sites, seven public water supply wells, and 10 private wells. The water samples are being analyzed by the DHES Public Health Laboratory and DHES Chemistry Laboratory Bureau. The cool mornings and toasty afternoons experienced in the Clark's Fork Yellowstone Valley made June a perfect water sampling month! The next phase of water sampling in the valley will be conducted during September.

* * *



If every household in America had a faucet that dripped once each second, we would waste 928 million gallons of water a day or enough to fill 7.5 billion 8 oz. glasses.

The average daily requirement for freshwater in the United States is estimated to be 338 billion gallons a day. For Mother Nature to replace the water we use in a day, it would have to rain an average of one inch an hour for two solid weeks in Washington, DC.

Grassroots Planning Process Underway to Resolve Water Use Conflicts in the Upper Clark Fork Basin

by Gary Ingman, WQB

The upper Clark Fork River Basin of western Montana has long suffered from the over-appropriation of water for irrigated agriculture. The result has been serious stream dewatering problems which compromise all beneficial uses of the basin's water resources. Depletion of summer streamflows increases the impacts of wastewater discharges, elevates water temperatures, stimulates growth of nuisance algae, lowers dissolved oxygen content, and damages fish habitat. Some reaches of the upper Clark Fork and a number of its tributaries have nearly gone dry in recent years.

Two years ago, the battle lines were drawn for a showdown between competing water use interests in the upper Clark Fork Basin. A formal contested case hearing was scheduled, which pitted the Montana Department of Fish, Wildlife and Parks and others interested in supporting protection of instream flows against the Granite Conservation District and supporters seeking to reserve water for additional irrigation development. Fortunately, the battle never took place.

Instead, Clark Fork water users and managers sat down at the negotiating table to talk and, more importantly, to listen. The group was facilitated by Northern Lights Institute, a non-profit group that specializes in conflict resolution pertaining to natural resource issues. Several months later, an agreement was reached and legislation was prepared and passed by the 1991 Montana Legislature.

Parties to the agreement included irrigators, recreational and environmental groups, hydroelectric utilities, water user groups, and state and local water management agencies. Through the legislation, sponsored by Senator Tom Beck of Deer Lodge, a moratorium was declared on the issuance of most new surface water rights until June 30, 1995. It also created the Upper Clark Fork Basin Steering Committee and charged it with preparing a water management plan that would consider and balance all beneficial water uses in the basin above Milltown Dam. The plan, which must be presented to the Legislature and Governor by the end of 1994, must also contain a recommendation concerning the water rights moratorium and identify and make recommendations for resolving water use issues in the basin.

During its first year, the steering committee reviewed Montana water rights and water quality statutes, and heard briefings on Superfund activities, agricultural water use patterns, and other issues and concerns. It also toured the Clark Fork River and some of its tributaries to view firsthand water use practices, problems, and examples of cooperative problem solving. It then began the development of a workplan to guide the formulation of the water management plan.

Last December and January, the committee held a series of six public meetings throughout the basin to brief local residents and water users about the planning process and to invite their participation. Subsequently, six watershed committees composed of local residents and water users were established to identify specific problems and potential solutions in various reaches of the basin and to develop a dispute resolution process. This information, to be developed over the next 12 months, will be at the core of the management plan. The steering committee will integrate the information from all six watershed subgroups into a coordinated management scheme. The approach emphasizes public involvement and local solutions to local problems rather than bureaucratic regulation.

The upper Clark Fork water management planning process is unique. Never before in Montana has a group this diverse tackled a challenge this broad --- to develop a plan to protect and balance all water uses in a large river basin. If the approach works, it could serve as a model for the resolution of water quality/water quantity problems in Montana's numerous other over-appropriated drainage basins.

Did You Know . . .

- There is the same amount of water on Earth today as there was three billion years ago. This amounts to some 326 million cubic miles of water covering 71 percent of the Earth (one cubic mile is more than a trillion gallons).

- Nearly one half of the world's population lacks access to clean water for sanitation, drinking, and other human needs.

- You are made mostly of water. For example, a three-day old fetus is 97 percent water; an eight-month old baby is 81 percent water; an adult body is 65-70 percent water.

- You could survive about a month without food, but could only survive 5-7 days without water.

- Water keeps you healthy by preventing your bones from grinding and your eyes from drying out.

- Water carries the chemicals in your brain so you can feel and think.

- Water keeps your skin moist and protects it from the weather.

- In the U.S. alone, industry uses over 100 cubic miles of water per year to cool, wash, circulate, and manufacture its materials. This is 30 percent of the water in the world's rivers.

- Six million square miles (12 percent of the land surface) is permanently covered by ice.

- Six million cubic miles of water locked in the ice caps could feed all the world's rivers for 1,000 years.

- Powered by the sun, the Earth's water cycle transfers 10.296 quadrillion gallons from the oceans to the land every year.

- Evenly distributed, Earth's annual rainfall could cover every square foot of land to a depth of about three feet.

- In one summer day, a single willow tree uses and loses over 5,000 gallons of water.

- An acre of corn produces more atmospheric water vapor than a lake of the same size.

- Three quarters of the weight of a living tree is water.

- A leaking faucet can waste up to 100 gallons of water per day.

America's Clean Water Foundation
444 North Capitol St., N.W., Suite 330
Washington, D.C. 20001
(202) 624-7833

RADON IN GROUND WATER OF WESTERN MONTANA

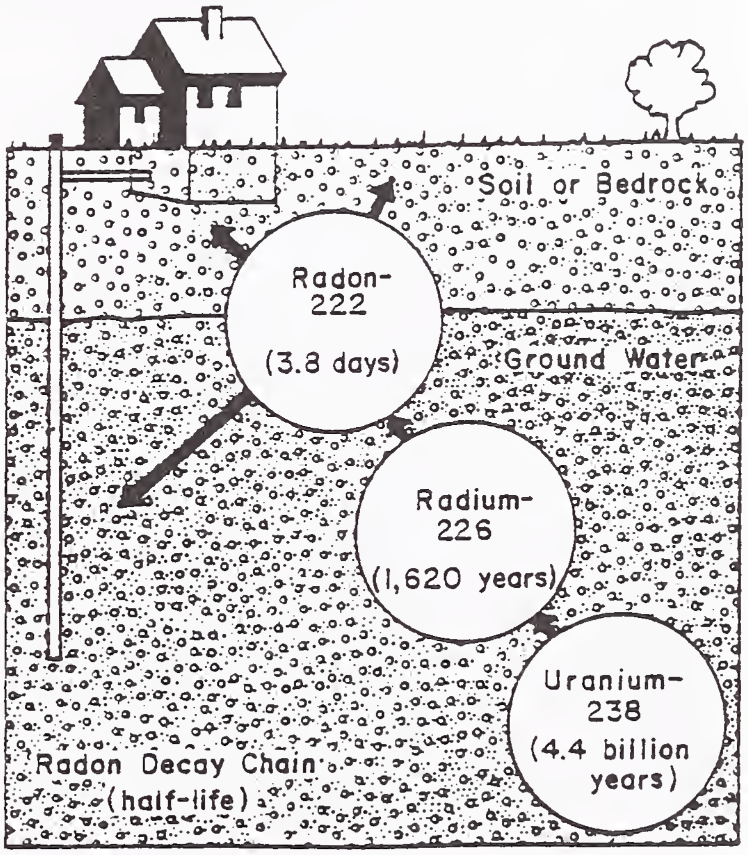
U.S. Geological Survey
U.S. Department of the Interior

WHAT IS RADON AND HOW DOES IT OCCUR?

Radon is a naturally occurring, odorless, tasteless, inert gas. Radon-222, the only abundant isotope, is formed by the natural radioactive decay of uranium, which is present to some extent in nearly all rocks. Uranium-238 decays through a series of daughter products to radium-226, which in turn decays to radon-222 with a half-life of 3.8 days. Radon-222 (referred to as radon in this report) can enter pore spaces in the rock and from there, (1) is dissolved in ground water, (2) is released to the atmosphere at the land surface, or (3) is trapped in confined spaces. The quantity of radon that can dissolve in ground water is proportional to the quantity of uranium available for decay, the physical properties of the rock, and the flow rate of ground water.

The concentration of radon in the atmosphere is small, about 0.4 picocuries per liter (pCi/L), and is not considered harmful. In confined spaces such as houses and other buildings, however, radon in the air can increase to large concentrations relative to the atmosphere. Radon can enter buildings through cracks, vents, joints, or other openings in basement floors and walls. Radon also can enter the air in buildings by degassing from well water used for household purposes. A simplified version of the radon decay chain and some of the possible migration paths radon can take is shown in the diagram which follows.

The concentration of radon is measured in pCi/L of air or water. The average concentration of radon in ground water in the United States is less than 1,000 pCi/L. Many regions of the country, however, contain concentrations of radon in ground water in excess of 10,000 pCi/L and concentrations exceeding 1,000,000 pCi/L have recently been detected in some areas, including the Rocky Mountains.



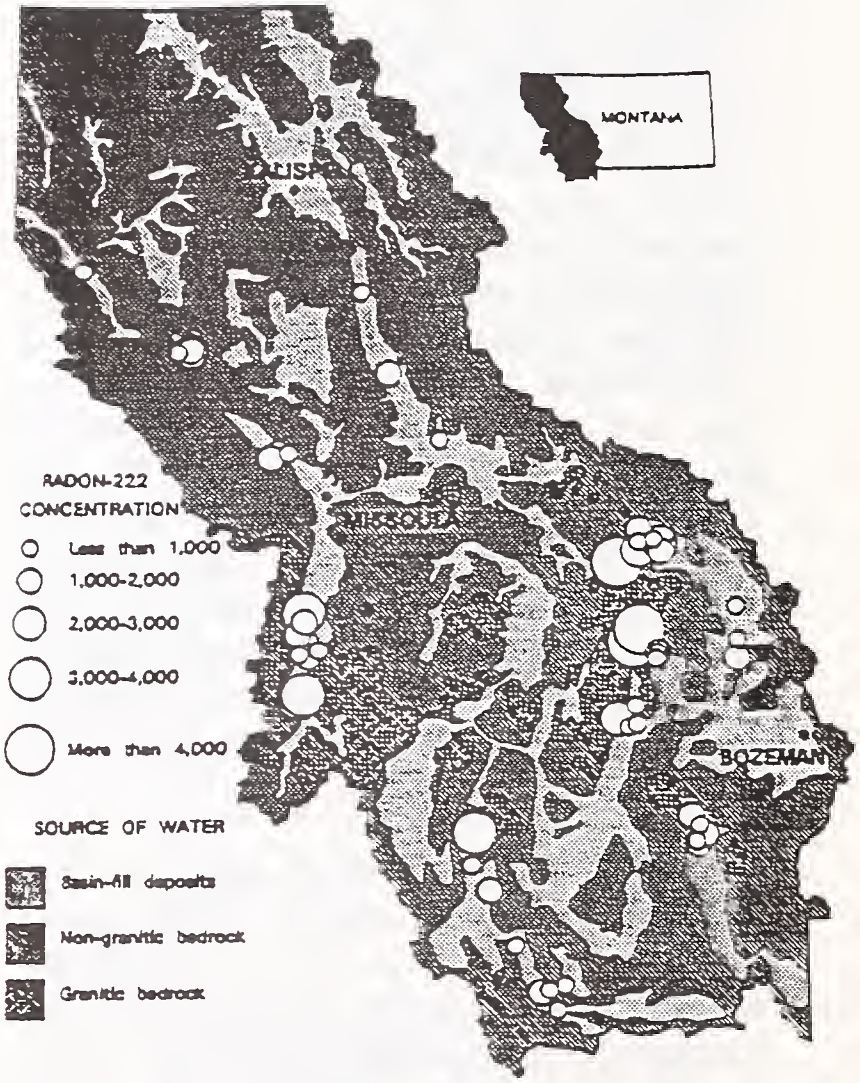
WHY IS RADON A PROBLEM?

Radon is thought to be the second leading cause of lung cancer (smoking is number one) in the United States, and is estimated by the U.S. Environmental Protection Agency (EPA) to cause from 7,000 to 30,000 lung-cancer deaths per year. Recent surveys by the EPA have indicated that houses in Montana have some of the largest concentrations of radon in indoor air in the United States. To minimize exposure and possible health risks, the EPA recommends that the average concentration of radon in indoor air not exceed 4 pCi/L. This concentration was established as a guideline based on lung-cancer risks and remedial actions that can readily and economically decrease the concentration in indoor air.

Ingesting water containing radon is considered to be a minor health risk when compared to the risk from breathing air containing radon. Any process that exposes ground water to air releases dissolved radon, especially when the water is heated. The released radon increases the radon concentration of indoor air and increases exposure. The EPA estimates that, as a general rule, the concentration of radon in indoor air will increase by 1 pCi/L for every 10,000 pCi/L of radon in household water, and that household water accounts for an average of about 2 to 5 percent of the radon in the house. The percentage will fluctuate, depending on the radon concentration in the water and in the air, the quantity of water used, how much the water is heated or aerated, and the type of house construction. In severe situations, however, as much as 75 percent of the radon in indoor air may be contributed by household water. To keep radon concentrations in indoor air to a minimum, the EPA has proposed that the concentration of radon in public water supplies not exceed 300 pCi/L. Recent studies indicate that radon in water from perhaps as many as half of the public supply wells in the United States might exceed that concentration. Households or public supply systems that use surface water sources generally do not have a problem with radon in the water because radon dissolved in surface water rapidly escapes to the atmosphere.

WHAT IS KNOWN ABOUT RADON IN GROUND WATER OF WESTERN MONTANA?

During summer 1992, the U.S. Geological Survey (USGS) collected water samples for analysis of radon concentrations from 56 wells in western Montana including wells used for public supply, domestic, stock, and irrigation purposes. Of those wells, 47 are completed in basin-fill deposits, 6 in granitic bedrock, and 3 in non-granitic bedrock. The depths of the sampled wells ranged from 40 to 390 feet. The approximate location of the sample sites and a relative indication of radon concentrations in ground water at those sites are shown on the map. Radon concentrations in water from the sampled wells ranged from 280 to 9,000 pCi/L. All water samples but one had radon concentrations that exceeded the proposed EPA standard for public supply wells.



No apparent correlation was observed between radon concentrations in water and well depth; however, an apparent correlation does exist between radon concentrations and the type of geologic unit in which the well is completed. The 5 water samples having the largest radon concentrations are from wells completed in granitic bedrock (map), which is probably the major source of radon in the water. Other water samples having large concentrations of radon appear to be correlated with basin-fill deposits that are at least partly derived from granitic bedrock. However, the apparent correlation of granitic rock to a large concentration of radon may not be representative of all situations, as indicated by a water sample from granitic bedrock that contained only a relatively small concentration of radon.

Large concentrations of radon in water from granitic-type rocks primarily are related to the concentration of uranium in those rocks. Granitic bedrock in parts of western Montana is known to contain 10 parts per million, of uranium, which is as much as 5 times the concentration of uranium known to be a likely source of radon for ground water or indoor air. Non-granitic rock types in western Montana that are a potential source of radon include metamorphic rocks, organic or phosphate-rich sedimentary rocks and, to some extent, glacial deposits and carbonate rocks such as limestone.

WHAT CAN BE DONE ABOUT RADON IN WATER?

Many households in western Montana rely on ground water from wells as the principal source of water. For those households having private water supplies, it is the homeowner's decision whether to test and begin remedial action for radon. The most common remedial actions are aeration and granular activated-carbon systems, both of which are efficient in removal of radon. Aeration methods require agitating the water and exposing it to air before use, but it cannot be housed indoors and can be costly. Granular activated-carbon systems are similar in appearance and function to a water-softener tank, with dissolved radon and other radioactive elements attaching to the carbon. Whereas these systems are efficient and cost-effective, disposal of the carbon can be a problem due to a buildup of radioactivity if radioactive elements other than radon are present in the water source.

For additional information on radon and household testing, contact the Occupational and Radiological Health Bureau or the Water Quality Bureau of the Montana Dept. of Health and Environmental Sciences, P.O. Box 200901, Helena, MT 59620-0901. Other contacts include the Montana Office of EPA, Federal Building, Helena, MT 59626; and the Radiation in Indoor Air Branch, EPA Region 8 Office, Denver, CO 80202-2413.

SELECTED REFERENCES

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Lawrence, E.P., Wanty, R.B., and Nyberg, Philip, 1992, Contribution of 222Rn in domestic water supplies to 222Rn in indoor air in Colorado homes: Health Physics, v. 62, no. 2, p. 171-177.

U.S. Environmental Protection Agency, U.S. Department of Health and Human Services, and U.S. Public Health Service, 1992, A citizen's guide to radon (2d ed.)-The guide to protecting yourself and your family from radon: Washington, D.C., U.S. Government Printing Office, 15 p.

Wenrich, K.J., Miller, W.R., Suits, V.J., and McHugh, J.B., 1990, Uranium and thorium potential, *in* Mineral resources of the Elkhorn Wilderness Study Area, Broadwater and Jefferson Counties, Montana: U.S. Geological Survey Bulletin 1805, p. 34-35.

Zapecza, O.S., and Szabo, Zoltan, 1988, Natural radioactivity in ground water-A review, *in* National Water Summary 1986-Hydrologic events and ground water quality: U.S. Geological Survey Water Supply Paper 2325, p. 50-57.

Reprinted from "Water Fact Sheet"
U.S. Geological Survey
U.S. DEPARTMENT OF THE INTERIOR

Drinking Water and Local Government in Montana

by Carole Mackin, Water Quality Bureau

Historically, the creation of local governments has gone hand in hand with management of drinking water in Montana. Have you ever wondered why the town of Bearcreek with only 37 residents has a mayor and the community of Frenchtown with over 500 people has none.

Local governments are created to provide services to a community of people and businesses. One of the most important services is supplying safe and plentiful drinking water. The majority of Montana's local governments are rural in nature and clustered along the alluvial river valleys where water is most plentiful. Water is supplied directly from a river or pumped from wells in the alluvial aquifers.

Over 1900 places in Montana have been designated as post offices during Montana's history. Today, however, the highway map lists only 470 communities. Of these communities, only 127 have municipal governments. In the book, *We the People of Montana, the Workings of a Popular Government*[1], the most common reason for communities to establish a municipal government was to provide a water supply. Up to 1915, the state legislature required incorporation before a community could operate a water system. Many small, rural towns have municipal governments today only because of this early requirement.

Today there are 616 community public water supplies. Only 20 percent are managed by a municipal government. Ninety-three of these communities use surface water and 523 use groundwater. If a local government does not exist to manage the water supply, management can be by water districts, homeowners associations, colonies, or owners of trailer parks, subdivisions, or apartments. Figure 1 shows the breakdown of the types of entities that manage water systems today.

In the 1990s, new economic pressures and environmental concerns are affecting community water supplies. Resolving these concerns will likely alter the interrelationship of local and county government in Montana. Current water issues may lead to a greater dependence by unincorporated communities on county government.

New EPA regulations will require public water supplies to test their water for pesticides, organic chemicals, radionuclides, and asbestos beginning in 1993. These tests may run over $1,000. In addition, in 1995, all groundwater systems will be required to disinfect the water supply. These new costs will affect the economic viability of the small public water supplies. Those water supplies without municipal governments may look to county government to supplement needed operating funds.

The discovery of several hazardous waste sites around the state have alerted communities to the vulnerability of their water supplies to pollution. It can cost millions of dollars to clean up polluted groundwater; and, sometimes, no amount of clean-up can restore the water to its original quality. Interest is building in protecting groundwater from potential contamination.

Montana has established a Wellhead Protection Program to empower communities to designate a wellhead protection area around a well and manage it to control activities that are potential sources of contamination to the groundwater. Most unincorporated communities are not able to pass ordinances to manage the wellhead protection areas. They may look to county government for management control.

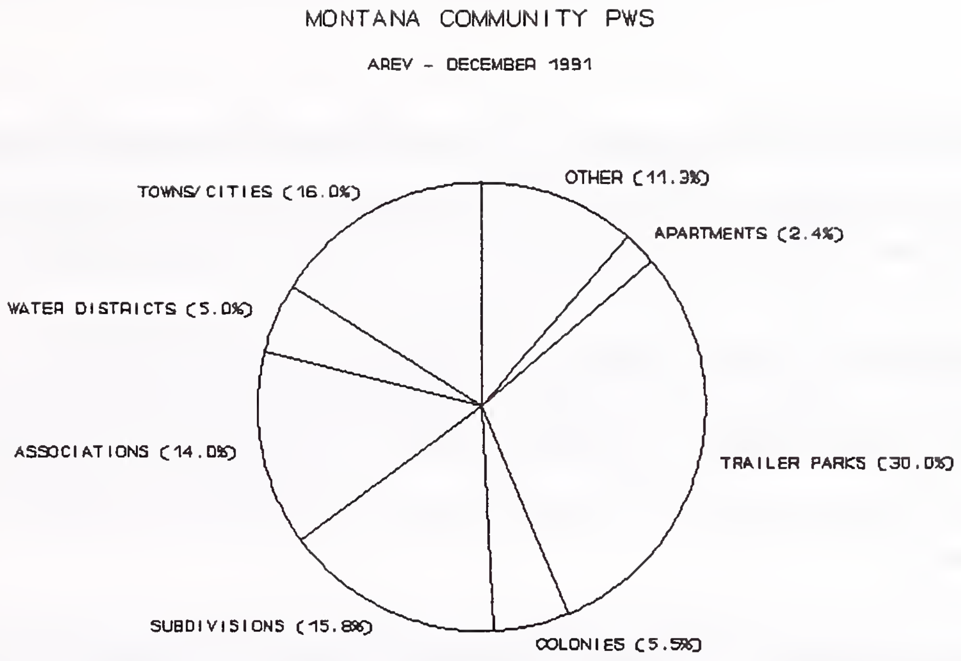

Figure 1

Counties have the ability to establish planning areas to address a wide variety of development issues. A planning area could provide management guidelines for wellhead protection areas. County commissioners also can establish a Local Water Quality District under Montana Law[2]. The purpose of the district is to protect, maintain, or improve water quality. The district is supported by user fees collected along with county taxes. Montana currently has two Local Water Quality Districts: one covers the Helena Valley and the other the Missoula Valley.

For more information on Montana's Wellhead Protection Program and Local Water Quality Districts contact the Water Quality Bureau, Department of Health and Environmental Sciences, PO Box 200901, Helena, Montana 59620-0901 or call 444-2406.

1. Lopach, James J. editor. 1983. *We the People of Montana, the Workings of a Popular Government.* Mountain Press Publishing Company. Missoula, MT.

2. State of Montana. 1991. "Local Water Quality Districts". *Montana Code Annotated.* 7-13-4501 to 4529. Montana Legislative Council. Helena, MT.

Reminder of Phase II and V Sampling

by Rick Cottingham, WQB

Hopefully all Community (C) and Non-Transient Non-Community (NTNC) Public Water Systems have either begun or have at least scheduled Phase II and V sampling dates. Remember to contact your lab to get set up for sampling.

Transient water systems (TWSs) have it relatively easy. They are required to comply with just monthly bacteriological starting in October 1993 and the Nitrate and Nitrite regulations in the Phase II regulations. This boils down to one nitrate sample annually and one nitrite sample every three years for these systems.

For Community and Non-Transient Non-Community systems it is more complex. Phase II and V base monitoring began for C and NTNC systems this year and is phased in based on system size. For systems with 150 or more service connections monitoring begins in 1993.

Systems having less than 150 but more than 40 service connections must begin no later than the spring quarter (April thru June) 1994 and systems with less than 40 services may wait until winter quarter (January thru March) of 1995.

Except for nitrate, which must be monitored annually for groundwater and quarterly for surface water systems, and the rest of the inorganics, which must be sampled once in the first three-year compliance period for groundwater and annually for surface water systems, four consecutive quarters of sampling are required during the three-year compliance period beginning in 1993. **You may, however, still take advantage of either of two provisions for reducing your sampling:**

- The Chafee-Lautenberg amendment allows the state to require just one sample for the organic contaminants during the initial three-year monitoring period for those systems that (a) sample between September 1992 and October 1, 1993, (b) serve less than 3300 people, and (c) show no detection of the organic chemical in this and all previous samples. **This alternative will be the least costly approach for nearly all systems.** The organic contaminants include all of those tested by the six EPA methods listed on the enclosed table. The sample should be collected when each source is most susceptible to contamination. For example, if there is agricultural activity in a source's watershed, the sample should be collected when pesticides are being applied.

* If you can demonstrate that a synthetic organic chemical (SOC) is not used, stored, or manufactured in your area or that your water supply is not susceptible to contamination, you may apply for a waiver after one quarter of sampling for groundwater and two quarters of sampling for surface water systems. Waivers must be renewed during each three-year compliance period. Please contact the Water Quality Bureau if you are interested in pursuing any waivers.

The rule requires testing of the chemicals in the enclosed table, but does allow some SOC waivers if it can be shown that contamination from an SOC or group of SOCs is unlikely. The Water Quality Bureau is investigating the possibility of regional or statewide waivers for some SOCs, and is therefore deferring the testing of Glyphosate, Diquat, Endothall, and Dioxin until further notice. If you wish to qualify for provisions of the Chafee-Lautenberg amendment you may proceed with testing of these four chemical contaminants before October 1, 1993, but please be aware that this testing will become unnecessary if the waiver effort is successful. EPA's review of this waiver application is proceeding more slowly than expected.

Asbestos is also deferred for systems without any asbestos-cement pipe. If asbestos-cement pipe is used in your system, then one sample is required in the first three-year compliance period. The sample must be collected from a tap served by asbestos-cement pipe and under conditions where asbestos contamination is most likely to occur.

If VOC sampling was performed after 1987, no VOCs were detected and you have been notified in writing by the Water Quality Bureau that a source has satisfied the VOC sampling requirements, only one VOC sample is required for that source during 1993.

PLEASE REFER TO THE

CHARTS AND TABLES

IMMEDIATELY FOLLOWING THIS ARTICLE

COMMUNITY AND NON-TRANSIENT NON-COMMUNITY PUBLIC WATER SUPPLY MONITORING REQUIREMENTS

SUGGESTED TEST METHODS	ESTIMATED COSTS **	REQUIRED CHEMICALS	
INORGANIC TEST METHODS ARE TO NUMEROUS TO LIST (NOT INCLUDING ASBESTOS) *UP TO 5 COMPOSITS FOR CYANIDE & MERCURY*	$330	ALKALINITY *** ANTIMONY * ARSENIC ASBESTOS (IF A/C PIPE) BARIUM BERYLLIUM * CADMIUM CALCIUM *** CHROMIUM CONDUCTIVITY *** CYANIDE * FLUORIDE	IRON *** MAGNESIUM *** MANGANESE *** MERCURY NICKEL * NITRATE NITRITE pH *** SELENIUM SODIUM *** SULFATE THALLIUM *
EPA METHOD 524.2 UP TO 5 COMPOSITES	$140	VOLATILE CHEMICALS ARE TO NUMEROUS TO LIST. CERTIFIED LABORATORIES WILL PERFORM THIS TEST FOR ALL OF THE REQUIRED CHEMICALS.	
EPA METHOD 504/505 NO COMPOSITES	$120	CHLORDANE DBCP EDB	PCBs TOXAPHENE
EPA METHOD 515.1 UP TO 5 COMPOSITES	$180	2,4-D 2,4,5-TP DALAPON DICAMBA *	DINOSEB PENTACHLOROPHENOL PICLORAM
EPA METHOD 531.1 UP RO 5 COMPOSITES	$75	3-HYDROXYCARBOFURAN * ALDICARB ALDICARB SULFOXIDE ALDICARB SULFONE	CARBARYL * CARBOFURAN METHOMYL * OXAMYL
EPA METHOD 525.1 NO COMPOSITES	$240	ALACHOR ALDRIN * ATRAZINE BENZO(A)PYRENE BUTACHLOR * DI(2-ETHYLHEXYL)ADIPATE DI(2-ETHYLHEXYL)PHTHALATE DIELDRIN * ENDRIN HEPTACHLOR	HEPTACHLOR EPOXIDE HEXACHLOROBENZENE HEXACHLOROCYCLOPENTADIENE LINDANE METHOXYCHLOR METOLACHLOR * METRIBUZIN * PROPACHLOR * SIMAZINE

* NOT REQUIRED UNTIL 1996 FOR SYSTEMS WITH LESS THAN 150 SERVICE CONNECTIONS

** ESTIMATED COSTS ARE EFFECTIVE UNTIL JUNE 30, 1995
(FOR DEPARTMENT OF HEALTH & ENVIRONMENTAL SCIENCES LABORATORY)

*** NOT REQUIRED IF ENTRY POINT HAS BEEN TESTED FOR THESE CHEMICALS

CERTIFIED MONTANA LABORATORIES

	CERTIFIED FOR					
LABORATORIES	MICRO-BIOLOGICAL	NITRATES	INORGANIC	SOCs[1]	RAD	VOCs[2]
Public Health & Chemistry Labs (Helena)	◆	◆	◆	●		◆
Montana Environmental Lab (Kalispell)	◆	◆				
Missoula City-County Health Dept (Missoula)	◆					
AMATEC (Billings)	◆					
Lewistown Water Quality Lab (Lewistown)	◆					
Energy Laboratories (Billings)		◆	◆	●	◆	◆
MSE, Inc. (Butte)		◆	◆			
Chen-Northern (Billings)		◆	◆	◙		◆
Montana Bureau of Mines & Geology (Butte)		◆	◘			
Intermountain Laboratories (Bozeman)		◆	◘	●		◆
Montana Dept. of Agriculture (Bozeman)				◙		
City of Billings (Billings)		◆	◘			

◆ Fully certified
● Certified for all SOCs required in 1993
◘ Not certified for *ALL* required inorganic chemicals
◙ Not certified for *ALL* required SOCs

[1] SOCs are synthetic organic chemicals (pesticides, etc.)
[2] VOCs are volatile organic chemicals (solvents, etc.)

(This list will be updated as laboratories obtain certification)

ADDRESSES & PHONE NUMBERS

Public Health and Chemistry Labs
Cogswell Building, Room B105
1400 Broadway - P.O. Box 200901
Helena, MT 59620-0901
Phone: 444-2642

Montana Environmental Lab
376 West Washington
P.O. Box 8900
Kalispell, MT 59901
Phone: 755-2131

Missoula City-County Health Dept.
301 West Alder
Missoula, MT 59801
Phone: 721-5700, Ext. 3340

AMATEC
P.O. Box 20873
Billings, MT 59104
Phone: 248-2159

Lewistown Water Quality Lab
P.O. Box 820
Lewistown, MT 59457
Phone: 538-3270

Energy Laboratories, Inc.
1077 South Broadway
P.O. Box 30916
Billings, MT 59107-0916
Phone: 252-6325

MSE, Inc.
Analytical Laboratory
106 South Parkmont
Industrial Park
Butte, MT 59701
Phone: 494-1403

Chen-Northern, Inc.
600 South 25th Street
P.O. Box 30615
Billings, MT 59107
Phone: 248-9161

Montana Bureau of Mines
Montana College of Mineral Science &
Technology - Analytical Division
Butte, MT 59701
Phone: 496-4164

Intermountain Laboratories, Inc.
1160 Research Drive
Bozeman, MT 59715
Phone: 586-8450

Montana Department of Agriculture
Laboratory Bureau
McCall Hall - Montana State University
Bozeman, MT 59717
Phone: 994-3383

City of Billings
Public Utilities Department Laboratory
Highway 87 East - P.O. Box 30958
Billings, MT 59111
Phone: 657-8353

June 6, 1993

DEPARTMENT OF
HEALTH AND ENVIRONMENTAL SCIENCES
PUBLIC HEALTH LABORATORY/CHEMISTRY LABORATORY

COGSWELL BUILDING
1400 BROADWAY

STATE OF MONTANA

(406) 444-2642 (OFFICE)
(406) 444-1802 (FAX)

PO BOX 200901
HELENA, MONTANA 59620-0901

Montana Department of Health and Environmental Sciences
Chemistry Laboratory Bureau

Drinking Water Analysis Fees
Anticipated for FY 1994

Inorganics

pH	4.90	conductivity	4.90	calcium	7.30
magnesium	7.30	sodium	7.30	potassium	7.30
chloride	17.40	alkalinity	12.60	sulfate	17.40
fluoride	20.00	nitrate	12.60	iron	7.30
copper	7.30	lead	7.30	cadmium	7.30
arsenic	12.60	manganese	7.30	barium	7.30
chromium	7.30	mercury	38.20	selenium	12.60
silver	7.30	cyanide	94.10	nickel	7.30
nitrite	18.50	silica	7.30	ortho-phosphate	12.60
antimony	12.60	thallium	12.60	beryllium	7.30

Organics

Pesticides/PCBs/EDB by method 504/505	120.00
Synthetic Organic Compounds(SOCs) by method 525	240.00
Carbamate Pesticides by method 531	75.00
Chorophenoxy Herbicides by method 515	180.00
Volatile Organic Compounds(VOCs) by method 524	140.00

Phase II and Phase V analyses will cost from $648.20 to $1083.10 depending on the size of the system and the number of composite samples run. This laboratory will composite as many samples as possible to reduce analysis costs to community water suppliers.

"AN EQUAL OPPORTUNITY EMPLOYER"

OUT-OF-STATE CERTIFIED LABORATORIES

	CERTIFIED FOR					
LABORATORIES	ASBESTOS	NITRATES	INORGANIC	SOCs[1]	RAD	VOCs[2]
Copper State Analyical Laboratory, Inc. 710 East Evans Boulevard Tucson, AZ 85713 Phone: 602-884-5811		◆	▣	▣		◆
Montgomery Laboratories 555 East Walnut Street Pasadena, CA 91101 Phone: 818-568-6463	◆	◆	◆	◆	◆	◆
Eureka Laboratories, Inc. 6790 Florin Perkins Road Sacramento, CA 95828 Phone: 916-381-7953		◆	▣	◆		◆
GTEL Environmental Laboratories, Inc. 4080 Pike Lane Concord, CA 94520 Phone: 415-685-7852		◆	▣	▣		◆
Cenref Laboratories, Inc. 695 North Seventh Brighton, CO 80601 Phone: 303-659-0497		◆	▣	▣		◆
Accu-labs Research, Inc. 4663 Table Mountain Drive Golden, CO 80403-1650 Phone: 303-277-9514		◆	▣	▣	◆	◆
SVL Analytical One Government Gulch P.O. Box 929 Kellog, ID 83837-0929 Phone: 208-784-1258		◆	▣			◆
Weston-Gulf Coast, Inc. 2417 Bond Street University Park, IL 60466-3182 Phone: 708-534-5200		◆	◆	▣		◆
Environmental Health Laboratories 110 South Street Southbend, IN 46617 Phone: 800-332-4345		◆	▣	◆		◆
Coast-to Coast Analytical Services 7726 Moller Road Indianapolis, IN 46268 Phone: 800-875-8674			▣	▣		▣
GTEL Environmental Laboratories Midwest Region 4211 May Avenue Wichita, KS 67209 Phone: 800-633-7936		◆	◆	▣		◆
Braun Intertec Environmental, Inc. 6875 Washington Avenue South P.O. Box 39108 Minneapolis, MN 55439-0108 Phone: 612-941-5600		◆	▣			◆
MVTL Laboratories, Inc. P.O. Box 1873 Bismark, ND 58504-9724 Phone: 701-258-9720		◆	▣			
Controls for Environmental Pollution 1925 Rosina P.O. Box 5351 Santa Fe, NM 87502 Phone: 505-982-9841		◆	▣	▣	◆	◆

OUT-OF-STATE CERTIFIED LABORATORIES

	CERTIFIED FOR					
LABORATORIES	ASBESTOS	NITRATES	INORGANIC	SOCs[1]	RAD	VOCs[2]
Huntington-Asteco, Inc. 140 Telegraph Road P.O. Box 179 Middleport, NY 14105 Phone: 716-735-3894	▣					
Aqua-Tech Environmental Consultants, Inc. 181 South Main Street P.O. Box 436 Marion, OH 43301-0436 Phone: 800-783-5991						◆
Data Chem Laboratories 4388 Glendale-Milford Road Cincinnati, OH 45242-3706 Phone: 513-733-5336	◆		▣			◆
Roy F. Weston, Inc. 208 Welsh Pool Road Lionville, PA 19341-1313 Phone: 215-524-7360		◆	◆	◆		◆
Ford Analytical Laboratories 40 West Louise Avenue Salt Lake City, UT 84115 Phone: 801-466-8761		◆	◆	◆		◆
North Creek Analytical 18939 120th Avenue N.E. - Suite 101 Bothell, WA 98011-2569 Phone: 206-481-9200		◆	◆	▣		◆
National Chem Lab 103 12th Avenue Southwest P.O. Box 635 Ephrata, WA 98823 Phone: 206-334-6576		◆	▣	▣		◆
Inland Environmental laboratories East 16810 Euclid Avenue P.O. Box 14784 Spokane, WA 99214 Phone: 509-928-5651		◆	▣			◆
Energy Laboratories, Inc. 254 North Center Street Casper, WY 82602 Phone: 406-252-6325					◆	

◆ Fully certified

▣ Not certified for *ALL* required tests in this category

[1] SOCs are synthetic organic chemicals (pesticides, etc.)

[2] VOCs are volatile organic chemicals (solvents, etc.)

(This list is subject to change without notification and will be updated as laboratories obtain certification)

For current information call: *Helena Public Health and Chemistry Lab*
John Hawthorne 406-444-2643

Water Quality Bureau
Department of Health and
Environmental Sciences
1400 Broadway
P. O. Box 200901
Helena, Montana 59620-0901

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